# ANGIOGRAPHIC SEVERITY OF CAD IN PATIENTS WITH ACUTE CORONARY SYNDROME IN CORRELATION TO THEIR GLYCEMIC STATUS

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**COIMBATORE**


**THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY**

**CHENNAI, TAMILNADU, INDIA**

# CERTIFICATE

This is to certify that this dissertation titled **"Angiographic severity of CAD in patients with Acute coronary syndrome in correlation to their glycemic status"** is a bonafide work done by **Dr.M.GIRISH DEEPAK**, done under my direct guidance and supervision in the department of cardiology, PSG Institute of Medical Sciences and Research, Coimbatore in partial fulfillment of the regulations of **The Tamil Nadu Dr. M.G.R Medical University** for the award of DM degree in cardiology.

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# DECLARATION

I solemnly declare that this dissertation entitled **"Angiographic severity of CAD in patients with acute coronary syndrome in correlation to their glycemic status"** is a bonafide work done by me under the direct guidance and supervision of **DR.J.S.BHUVANESWARAN, MD, DM,** PSG Institute of Medical Sciences and Research, Coimbatore**.**

The dissertation is submitted to the **Dr. M.G.R Medical University** in partial fulfillment of the University regulations for the award of DM Degree in Cardiology.

Place:

Date:

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# INTRODUCTION

Atherosclerotic vascular diseases, which comprises coronary heart disease and cerebro-vascular disease is a major global health burden. They constitute 21.9 per cent of total deaths globally and are projected to increase further to 26.3 per cent by 2030[1].

The prevalence of diabetes is a global health burden. The overall prevalence is expected to rise from 285 million in 2010 to 438 million by the year 2030[2]. While diabetes poses a huge economic burden to all nations, developing countries bear the highest burden since more than 80% of cases occur in these countries.

Diabetes is considered as an independent risk factor for coronary artery disease and cardio vascular diseases. As per NCEP ATP III guidelines, diabetes is considered as a coronary artery disease equivalent[3].

Diabetes affects the endothelium and the glycation products get denatured and accelerate the process of atherosclerosis. Diabetic patients when compared to non-diabetics have increased risk of developing vascular complications and have two to four fold risk of developing coronary artery disease (CAD)[4]. They are more likely to develop vascular complications, affecting all the major organs of body. Cardiovascular diseases constitute one of the major cause of mortality and morbidity in diabetics, accounting for nearly 65-75% of deaths[5,6].

The results of Framingham study reveals a 2 fold risk of cardiovascular death in men and 4-5 fold risk of cardiovascular death in women with diabetes. They constitute the major cause of death in adult diabetic patients. Diabetics are likely to have low HDL levels than people without DM. Low HDL levels have been strongly associated with elevated risk for CAD.

Nearly 75% to 80% of deaths in diabetic patients are due to coronary artery disease, cerebro-vascular accidents and peripheral vascular disease.

Major risk factors which contribute towards cardiovascular diseases among diabetics are hypertension, dyslipidemia, hyperglycemia and obesity. There has been a direct correlation between cardio vascular complications and chronic hyperglycemia in various interventional studies[7,8]. The state of chronic hyperglycemia has been now measured by HbA1c, which averages the blood sugar levels of both fasting and post prandial states[9,10].

Diabetes affects both the vascular system and the myocardium of the heart. CAD is the most common cardiac manifestation in diabetic patients, followed by dilated cardiomyopathy and autonomic cardiovascular neuropathy.

Women who have diabetes loose their protection against coronary artery disease[11]. Cardio vascular disease accounted for 65% of death in women with diabetes in a western based population study[12].

In OASIS study[13] it was found that diabetes increased the mortality risk by 57.6% and in the FINISH study it was observed that men with diabetes had 28day mortality risk of 58%[14]. The relation between diabetes and CAD was further supported by the INTERHEART study[15]

Presenting high blood sugar levels has been considered as an independent risk factor of death in patients with or without diabetes[16]. High blood sugar levels at admission can either be diabetes or due to stress hyperglycemia or impaired glucose tolerance.

Hence it is important to study the spectrum of clinical presentation and the patterns of involvement of CAD in both diabetics and non-diabetics. It has been proved in many studies that diabetes increases the mortality risk in CAD.

The varying patterns of involvement of CAD in patients in relation to their glycemic status was studied in detail in a point to analyse any profound differences existed in the prediabetic group. The severity of coronary artery involvement in diabetics, prediabetics and non-diabetics were assessed quantitatively by means of GENSINI score[17] [Angiographic severity score] in our study. We have analysed the changes in patterns of CAD in patients according to their glycaemic status. The quantitative comparison of CAD and its influence by blood sugar levels and glycaemic status has been analysed in this study.

## Prevalence of Diabetes in INDIA and its burden

As of in 2011 International Diabetes federation (IDF) stated that 61.3 million Indians were suffering from diabetes. They have speculated a further rise to 101.2 million by the year 2030. The prevalence of diabetes in Indian studies is 7.3% vs 3.1% in urban and rural areas respectively[18]. In Indian reports, the prevalence of cardiovascular disease among diabetics is 30.4 per cent[19]and 39.1 per cent[20] in national and international prospective registries respectively.

In India, CAD incidence is increasing over the last 30 years, while a declining trend has been noted in the western population[21]. Reports have shown that Asian Indians have 3-4 times higher risk of CAD than white Americans, 20 times higher than Japanese and 6 times higher than chinese[22,23]

The reported incidence of CAD among people less than 40 years of age is around 12-16%. Of which 52% of CVD deaths occurred in people below 50 years, and 25% of acute myocardial infarction (AMI) occurred in people less than 40 years in INDIA[21].

# AIM OF THE STUDY

## Primary Aim:

1. To assess the severity of CAD by coronary angiography in pre-diabetic, diabetic and non-diabetic patients presenting with acute coronary syndrome
2. To assess the correlation between glycemic control and severity of CAD

## Secondary Aim:

1. To assess the relationship between the duration of diabetes and severity of CAD in diabetic patients

# REVIEW OF LITERATURE

## History of diabetes

Egyptian physician Hesy-Ra first mentioned in the manuscripts of Ebers Papyrus in 1500 BC mentioning it as 'too great emptying of urine'[24]. In Indian medicine, Charak and Sushrutha, had written between 400 and 500 BC. Urine in diabetes was described by Charak as 'madhumeha' or *honey urine* noting that the urine would attract ants. They were also the first to separate Type 1 and Type 2 diabetes as separate conditions referring Type 2 diabetes to be more associated with overweight[25]. Greek physician Aretaeus of Cappodocia gave a brief description of diabetes, in 12O CE, which he mentions it as 'the melting down of flesh and limbs into urine'.

It was in 1889, Joseph Vonmering and Oskar minkowski were the first to discover an association between pancreas and diabetes. They experimented in dogs and found that after removing their pancreas, they developed symptoms and signs of diabetes after which they died shortly[26]. Paul Langerhans discovered the islets of Langerhans in 1869, which were the chief cells of regulating glucose metabolism in the body[27].

Banting, Best, and colleagues with chemist Collin with their experiments led to the invention of insulin preparation and their first usage in 1922[28].

In 1923, Nobel prize was awared to Banting and Macleod in the field of Physiology Medicine. The United Nations announced November 14 as 'The World Diabetes Day' in honour of Frederick Banting's birthday.

## History of coronary artery disease

William Heberdan an English physician in 1768 announced his observations about the relationship of coronary vascular anatomy and ischemic heart disease. For a long time in history even up to 19th century the disease was called the 'Heberdan's disease'

Ludwig Hekben in 1879, by his studies concluded that myocardial infarction was due to coronary obstruction secondary to thrombosis.

In 1929, Werner Forssmann was the first to undergo self human catheterization, which he did on himself. Forssmann, a urologist while working on his experiments introduced a catheter into his jugular vein, and he immediately took an X-ray and found it to be inside the right atrium[29,30].

According to Cournand, the first catheterization was done by Claude Bernard in 1844 in a horse[31]. André Cournand together with Dickinson Richards successfully repeated in 1941 the trial of Forssmann. With their repeated attempts and experiments they were finally able to push the catheter in to right ventricle and take angiograms. Finally in 1950's the forthcoming experiments by them were a milestone in history towards the present day cardiac interventions[32].

Coronary arteriography and ventriculography became the gold standard for studying the vessel anatomy and left ventricular pump function. They gave valuable information and made way for surgical treatment for coronary revascularizations. The initial attempts and repeated experiments by Dotter and Judkins, Andreas Gruntzig led to the advances in invasive cardiology.

# DIABETES AND CAD

Diabetes mellitus is a chronic illness characterized by hyperglycemia resulting due to defects in insulin secretions, insulin actions or both. The chronic state of hyperglycemia results in both microvascular and macrovascular complications which causes damage to various organs, especially the eyes, kidneys, nerves, heart and blood vessels.

## Classification of Diabetes mellitus

Classification of diabetes according to **American diabetes association (2011)**[33] include four clinical classes:

| | |
|---|---|
| Type 1 diabetes | characterized by Beta cell destruction, resulting in absolute insulin deficiency |
| Type 2 diabetes | Characterized by defects in the secretion of insulin and insulin resistance |
| specific types | genetic defects in β cell function, diseases of the exocrine pancreas (such as cystic fibrosis), genetic defects in insulin action, and drug or chemical-induced (such as in the treatment of HIV/AIDS or after organ transplantation) |
| Gestational diabetes mellitus (GDM) | diabetes during pregnancy |

**Criteria for the diagnosis of diabetes**[33]

HbA1C > 6.5%.

or

FBS>126 mg/dl . (Fasting is defined as no food / caloric intake for at least 8 h)

or

2 hr plasma sugar >200 mg/dl during an OGTT.

or

In a patient with random plasma glucose >200 mg/dl and classic symptoms of hyperglycemia or hyperglycemic crisis.

**Categories of increased risk for diabetes (prediabetes)**[33]

FBS 100–125 mg/dl ( IFG )

or

2-h plasma glucose in the 75-g OGTT : 140–199 mg/dl (IGT)

or

HbA1C 5.7–6.4%

**Definition of Myocardial Infarction (ESC/ACCF/AHA/WHF Expert Consensus Document)**[34]

Acute myocardial infarction is defined as evidence of myocardial necrosis in a clinical setting consistent with acute myocardial ischemia.

Any one of the following criteria meets the diagnosis for MI:

Detection of a fall or rise in cardiac enzymes with at least one of the following:

- Symptoms of myocardial ischemia.
- New onset or presumed new significant ST-segment / T wave changes or new left bundle branch block (LBBB).
- Development of pathological Q waves in the ECG.
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality.
- Identification of an intracoronary thrombus by angiography or autopsy.

## CORONARY ATHEROSCLEROSIS

The process of atherosclerosis starts with the process of adherence of circulating blood monocytes to the endothelium. These monocytes then migrate to the sub-endothelial space, and further gets activated into monocyte-derived macrophages. Low-density lipoprotein (LDL) particles circulating in plasma slowly invades into the endothelium and gets oxidised. The process of lipoprotein oxidisation has been observed since child hood. These oxidised lipoprotein particles releases cytokines which attracts the monocytes[35,36]. This initial insult to the endothelium triggers an inflammatory response. Monocytes enter the arterial wall from the bloodstream and the platelets get adhered to the area of inflammation. The monocytes differentiate into macrophages, which ingest the oxidized LDL, and turns into specialised cells called the "foam cells"[37,38]. These foam cells gradually evade and accelerate the inflammatory process. There is proliferation of smooth muscle cells. They slowly migrate from the tunica media into the tunica intima in response to cytokines. This causes the formation of a fibrous capsule covering the fatty streak. Enzymatic degradation occurs by

time and erodes the fibrous membrane beneath the endothelium. As time passes, the endothelial cap separating the plaque and blood flow becomes thin and fragile. The mechanical stress on the arteries causes these thin membrane to rupture and causes spilling of these plaque contents into blood stream triggering thrombosis[39]. Blood clotting system gets activated and forms a clot around this site of plaque rupture. This results in unstable angina.

**Figure 1: Pathogenesis of atherosclerosis**

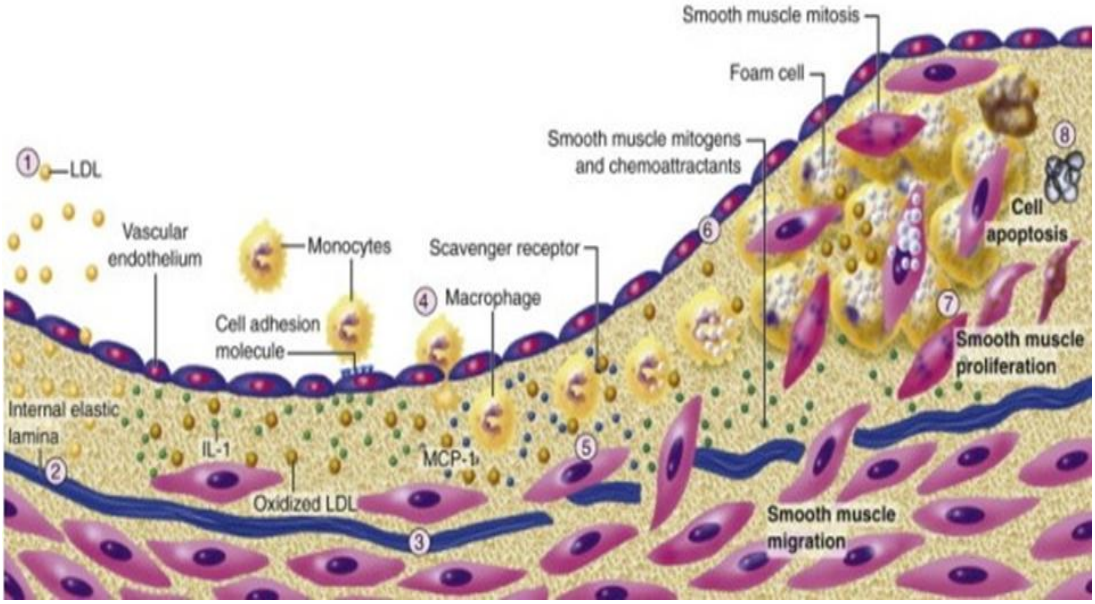



**Figure 2: Plaque formation**

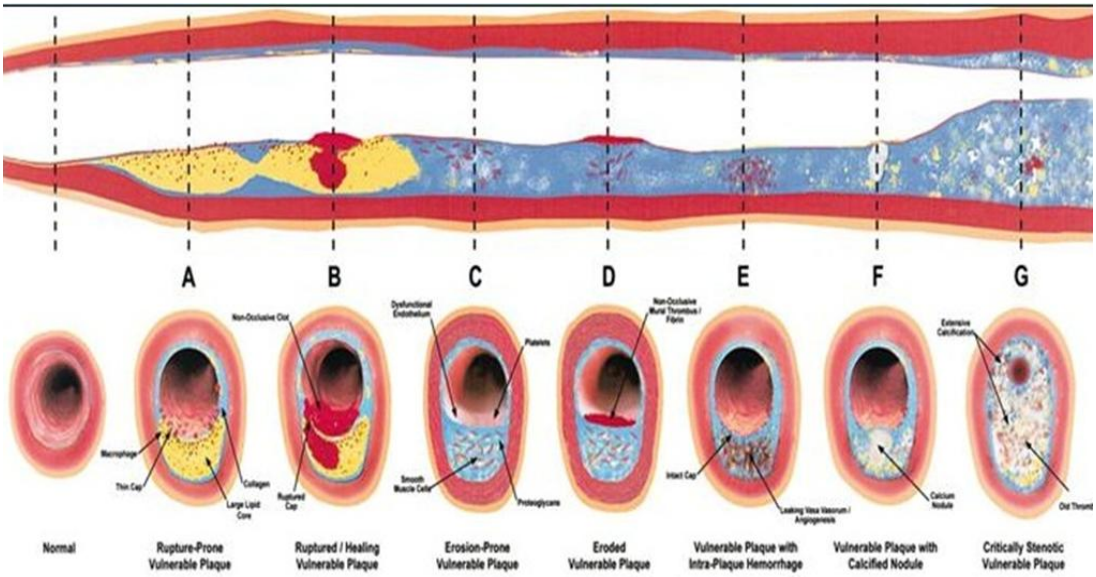
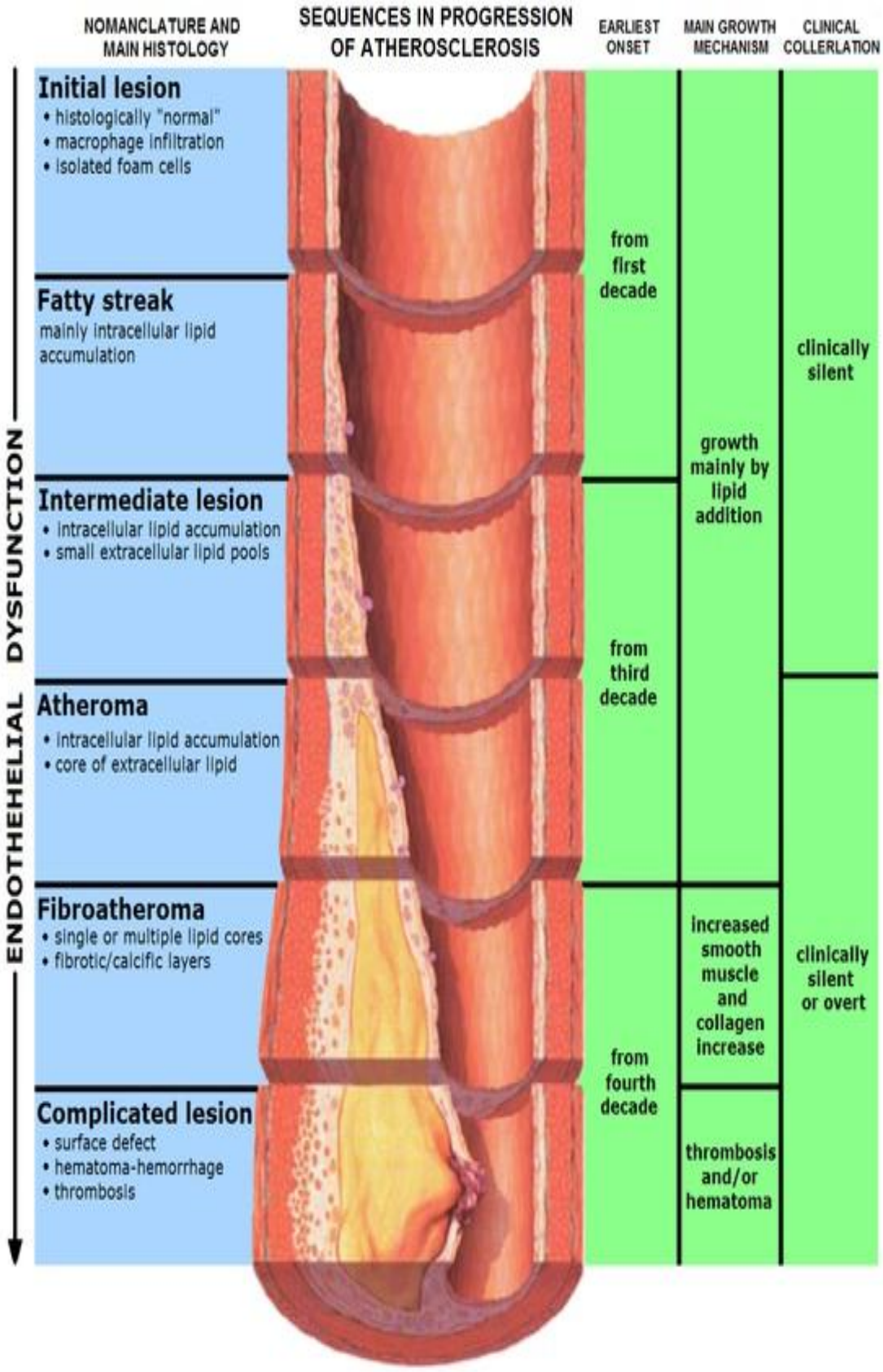


**Figure 3: Evolution of Atherosclerosis**



## PREDIABETES

Prediabetes (IFG and or IGT) is a stage in the natural history of diabetes. It represents a clinical state for (1) progression to diabetes mellitus (increased risk for diabetes) and (2) an increase in cardiovascular and possibly microvascular complications.

The period of transition from prediabetes to diabetes is usually many years, but also can be rapid[40,41]. Many studies and researches have estimated that upto 70% of individuals progress to diabetes[42]. The incidence is high in people with combined IFG and IGT rather than isolated IFG or IGT. People with IFG or IGT have 5-10% per year risk of developing diabetes, whereas people with normoglycemia have 0.7% per year risk of developing diabetes[42].

Many studies have shown that prediabetes (IGT and IFG) is associated with an increased risk for cardiovascular problems[43,44,45] .Usually they are associated with other cardiovascular risk factors, such as obesity particularly abdominal or visceral obesity, dyslipidemia and hypertension. There is increasing evidence that cardiovascular risk increases continually with increasing FBS levels. Prediabetes is associated with the development of microangiopathy. It was observed in 7.9% of patients with IGT to have diabetic retinopathy in Diabetes prevention program[46].

## Metabolic Syndrome and CVD

Metabolic syndrome increases the risk of CAD. In Framingham study[48], metabolic syndrome alone predicted ≈25% of all new-onset CVD. Metabolic syndrome chiefly comprises of glucose intolerance, obesity, Hypertension, micro albuminuria, hyperinsulinemia with hypertriglyceridemia, low HDL levels, and hypofibrinolysis. The pathogenesis is mainly attributed to insulin resistance. Insulin resistance promotes the progression of atherosclerosis even before it develops into frank diabetes. Hence insulin resistance is considered as a independent risk factor for atherosclerosis.

According to ATP III guidelines[47] presence of any 3 of 5 risk factors listed below is considered as metabolic syndrome

| Risk Factor | Defining Level |
|---|---|
| **Abdominal obesity, given as waist circumference** | |
| Men | >102 cm (>40 in) |
| Women | >88 cm (>35 in) |
| **Triglycerides** | ≥150 mg/dL |
| **HDL cholesterol** | |
| Men | <40 mg/dL |
| Women | <50 mg/dL |
| **Blood pressure** | ≥130/≥85 mm Hg |

At least three of the above ATP III criteria fit into metabolic syndrome. Atherosclerosis in type 2 diabetes mellitus is due to insulin resistance and hyperinsulinemia. Both of these mechanisms sets early in prediabetics, which precedes the onset of diabetes and impaired glucose tolerance by many years.

IFG is associated with hepatic insulin resistance, which results in fasting hyperglycemia, whereas IGT is predominantly associated with muscle insulin resistance. Most of the patients with prediabetes and metabolic syndrome are obese. There is an increase in adipose tissue which causes an increase in the levels of circulating free fatty acids (FFA) and adipokines[49]. These adipokines produce a proinflammatory and a prothrombotic state. The increase in FFA induces insulin resistance in muscles. In a chronic state they lead to lipotoxicity and produces beta cell dysfunction[50]. Elevated levels of FFA leads to increased hepatic glucose secretion and worsening hyperglycemia. They are also responsible for an increase in triglyceride levels and lowers HDL levels. Insulin resistance gradually presets a proinflammatory state and predisposes to cardiovascular disease[51].

## Pathogenesis of CAD in Prediabetes[52]:

The central process in the pathogenesis of prediabetes is the central obesity (measured by increased W:H ratio), which produces a state of insulin resistance and consequent hyperinsulinaemia. Because of the resistance to action of insulin there is a decreased cellular glucose uptake coupled with hepatic glucose production, which gets combined with β-cell exhaustion and produces a state of hyperglycemia.

**Mechanisms:** Hyper insulinaemia causes:

1. Increased renal $Na^+$/water re-absorption.

2. Over activity of sympathetic nervous system.

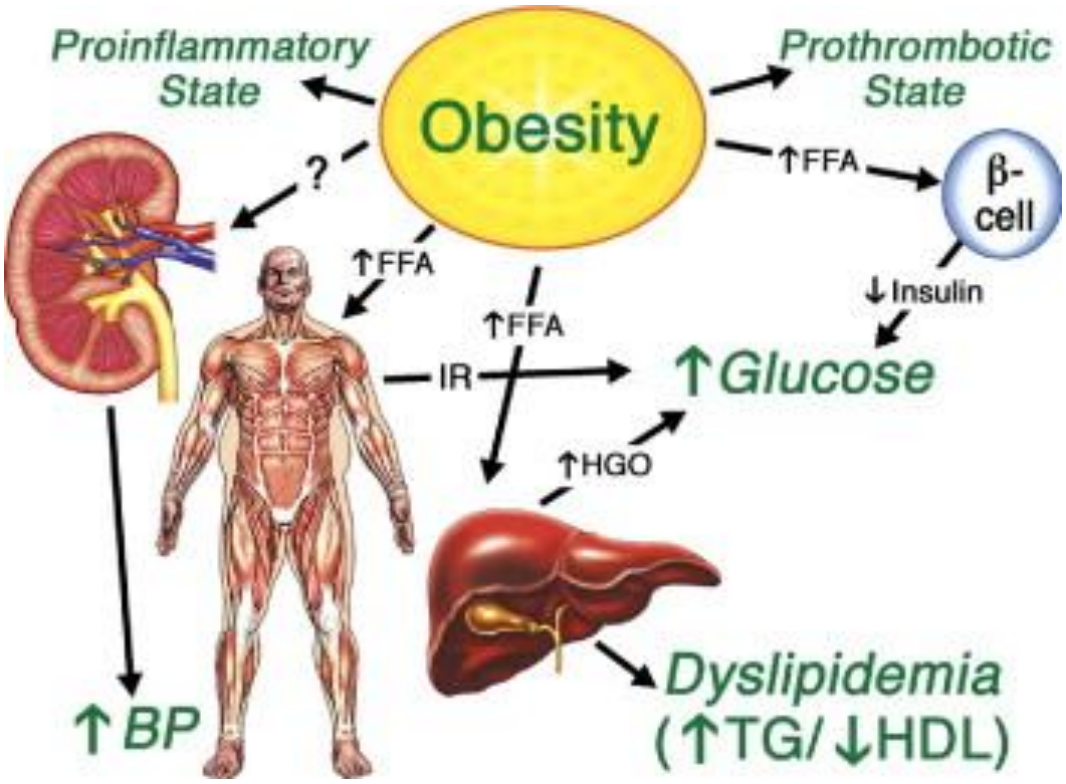
3. Increased $Na^+$-$H^+$ pump activity.

4. Decreased $Na^+$ -$K^+$ ATPase activity.

5. Increased $Ca^{2+}$ concentration (calcium-cytosolic) in cells.

6. Proliferation of arterial smooth muscle cells.

**Figure 4: Factors confounding in metabolic syndrome**



## Role of Insulin on Vascular Endothelium, in normal individuals:

Insulin has both anti-atherogenic and atherogenic properties on vascular endothelium.

| **Anti-atherogenic** | **Atherogenic** |
|---|---|
| Insulin stimulates the production of nitric oxide form vascular endothelium which causes | |
| Vasodilatation. | Vascular cell growth |
| Prevents platelet aggregation. | |
| Prevents growth of vascular smooth muscle cells (VSMC) | Synthesis of extracellular Proteins and type IV collagen. |
| Prevents migration and proliferation of VSMC. | Modest effect on growth of VSMC and atherogenesis. |
| Prevents formation of foam cells. | Stimulation of growth factors. |
| Inhibits expression of vascular adhesion molecules and intercellular adhesion molecules. | Enhanced LDL receptor activity and cholesterol synthesis. |
| Inhibits proinflammatory INF | |
| Inhibits production of monocytes chemo attraction protein-1 (MCP-1) | |

**Mechanisms by which insulin produces Atherogenesis and anti-atherogenesis:**

| Pathway-2 | Pathway-1 |
|---|---|
| Insulin binds to receptor | Insulin binds to insulin receptor |
| ↓ | ↓ |
| Intracellular protein 'shc' phosphorylated (docking protein) | Internationalization |
| ↓ | ↓ |
| Couple with signaling proteins like mitogen activated protein kinase (MAP-K) | Insulin receptor protein 1 & 2 are phosphorylated (Docking proteins) |
| ↓ | ↓ |
| Stimulates RAS, RAF, MEKK, MAPK (oncogenes) | Couple with signaling proteins like phosphatidylinositol-3 kinase) (Pl-3 kinase) |
| ↓ | ↓ |
| Extracellular matrix VSMC migration | Nitric oxide (NO) produced |
| ↓ | ↓ |
| Atherogenesis | Anti-atherogenesis |

## Insulin Resistance[53]:

Insulin resistance is a metabolic state in which a normal concentration of insulin produces a less than normal biologic response. Insulin resistance results from abnormalities at any point in the sequence of insulin synthesis and secretion, to its transport and action on target tissue level i.e., at receptor, pre-receptor, post receptor levels. With respect to diabetes and CAD, both pre-receptor and post-receptor mechanisms are important.

Insulin resistance sets in hyperinsulinemia which has been implicated for an increased incidence of coronary artery disease[54-57]. Insulin causes vasodilation through secretion of endothelial nitric oxide synthase. These mechanisms are affected in insulin resistance.

## Endothelial dysfunction

Endothelium has unique characteristics to maintain blood in a liquid state during circulation. These properties of endothelium are rendered by the expression of heparin sulphate and thrombomodulin on the surface of endothelium that inactivates the thrombin activation[58]. Endothelium also possesses fibrinolytic properties by production of urokinase type plasminogen activators, thus helps in maintaining an anti-thrombotic and anti-coagulant properties[59]. It also releases nitric oxide, prostaglandins, endothelin, angiotensin II. Nitric oxide produces vasodilation, which also reduces the inflammation caused by the adhesion of leucocytes and its migration thereby decreasing the smooth muscle cell proliferation[60-62]. All these protective mechanisms against atherogenesis are lost in Diabetes mellitus, increasing their relative cardiovascular risk. These changes are even apparent in patients with insulin resistance well before their progression into overt hyperglycemia.

## Hyperglycaemia

In atherogenesis there is a migration of monocytes and T-lymphocytes into the intima, producing cytokines. These monocytes ingest the LDL and form the Foam cells, which are the early precursors of atherosclerosis[63,64]. Hyperglycemia augments these pathological changes such as increased oxidative stress, non-enzymatic glycosylation of proteins and lipids, protein C activation and activation of transcription factors[65].

## Dyslipidemia

In diabetes, hyperglycemia is associated with high triglyceride levels, increased atherogenic low density lipoproteins, and lower high density lipoproteins. Moreover hyperglycemia promotes the glycosylation of LDL, thereby promoting the inflammatory action of macrophages to form foam cells. All these factors contribute to an increased risk of atherosclerosis in diabetes[66]. There is an increased hepatic free fatty acid concentration due to increased efflux from adipose tissues and insulin mediated skeletal muscle uptake, thereby liver increases VLDL production and cholesterol ester synthesis[67]. Overproduction plus decreased clearance of triglyceride rich lipoproteins due to the reduced action of lipoprotein lipase also leads to hypertriglyceridemia[68]. The increase in LDL particles are due to increased VLDL secretion and abnormal triglyceride and cholesterol transfer between VLDL and LDL[69,70].

## Inflammation

Diabetes is associated with up regulation of C-reactive protein, increased expression of VCAMs, Interleukins and activated protein C. All of which have been attributed to cause adverse cardiac outcomes[71-74]. Elevated C-reactive protein and VCAM levels are independently shown to be associated with poorer outcomes.

| | |
|---|---|
| Inflammation | ↑ IL-1β, IL-6, CD36, MCP-1<br>↑ ICAMs, VCAMs, and selectins<br>↑ Activity of protein kinase C<br>↑ AGEs and AGE/RAGE interactions |

## Prothrombotic state and platelet function

There is an increased expressions of factor VII, Factor VIII, Von willebrand factor, plasminogen inhibitor in diabetic patients. There is also a profound alteration in the platelet function such as a) increased expression of glycoprotein IIb/IIIa, b) decreased Nitric oxide production c) decreased prostacyclin production and d) increased production of fibrinogen. All of which causes a procoagulant state in diabetic individuals[75].

## Perturbations of platelet structure and function associated with diabetes[75]

| |
|---|
| Reduced membrane fluidity |
| Altered $Ca^{2+}$ and $Mg^{2+}$ homeostasis |
| Increased arachidonic acid metabolism |
| Increased thromboxane $A_2$ synthesis |
| Decreased nitric oxide and prostacyclin production |
| Decreased antioxidant levels |
| Increased expression of activation-dependent adhesion molecules (e.g., glycoprotein IIb/IIIa, P-selectin) |
| Increased platelet microparticle formation |
| Increased platelet turnover |

## Family history

The familial trend in the occurrence of CAD and its genetic basis is found in many numbers of genes and are yet expanding in the field of research. Many studies including the 'Framingham study' have found a significant association between family history and CAD and have now been considered as a separate independent risk factor for CAD[76-79]. Nearly more than 50% of patients who present with premature CAD are found to have genetically linked lipoprotein disorder[80]. The presence of additional risk factor such as smoking, sedentary lifestyle, obesity and dyslipidemia adds up to the relative risk of CAD in people with a positive family history of CAD. In a study in Finland, presence of family history of CAD was found to be associated with increased mortality risk.

### EFFECTS OF HYPERGLYCEMIA IN ACUTE MYOCARDIAL INFARCTION

Patients with AMI with hyperglycemia, have increased risk of adverse outcomes in both diabetic and non-diabetic patients[80]. In acute MI, hyperglycemia was found to be associated with worse clinical outcomes. Presence of hyperglycemia resulted in higher incidences of congestive heart failure, cardiogenic shock and death in patients with ACS. A number of mechanisms have been entitled for this increased adverse outcomes in patients with hyperglycemia, of particular interests include

## 1. Endothelial Dysfunction[81-88]

The possible accepted mechanism for hyperglycemia and poorer cardiovascular outcomes was the effect of acute hyperglycemia on the vascular endothelium. During situations of stress, the endothelium is subjected to various harmful effects such as dysfunction, dysregulation and failure. The resulting endothelial dysfunction ultimately leads

to altered angiogenesis, altered cell permeability, thrombosis and inflammation. Ultimately resulting in a loss of normal endothelial function.

Increased endothelial adhesiveness and enhanced haemostasis are both thought to contribute to atheroma formation. Endothelial vasomotor dysfunction is another abnormality that precedes the development of overt atheromatous disease. Endothelial vasomotor dysfunction presumably reflects wider endothelial damage and it is a powerful predictor of atherogenesis and MI.

## 2. Impaired collateral formation[89-91]

Collateral development is a cardio protective mechanism in the normal vascular endothelium in response to myocardial ischaemia. The development of collateral vessels was found to be much more impaired in patients with diabetes. In hyperglycemia there is a significant rise in the levels of reactive oxygen species (ROS) in the arteriolar endothelium. This along with added endothelial dysfunction, decreased production of Nitric oxide synthase and reduced production of NO resulted in an impairment of vasodilation and permeability. Thus altering the formation of collaterals. This resulted in an impaired initial vasodilation and permeability, impairing the formation of collateral vessels. Thus impairing the initiation of arteriogenesis and causes a negative effect on the remodelling of collateralization.

### 3. Increased microvascular dysfunction after reperfusion (hyperglycemia and the No-reflow phenomenon) [92-98]

The no-reflow phenomenon is one of the major factors determining the prognostic and clinical outcome of MI. This has been observed in up to 30% of patients with ACS, even after a successful PCI. This results in a large area of myocardial necrosis, poorer recovery and more post MI related complications.

In a study by Iwakura et al, it was found that hyperglycemia was a major factor predicting the occurrence of no-reflow. The large infarcts caused more release of catecholamines, which alters the free fatty acid and glucose metabolism. Acute hyperglycemia also resulted in an increase in levels of P selectin, which further increases the plugging of leucocytes into the capillaries. This clumping or trapping of leucocytes in coronary capillaries and venules early after coronary reperfusion are much more frequently observed in the diabetic heart than in the non-diabetic heart. The plugging of leucocytes in the microcirculation might further add up to the no-reflow phenomenon. Acute hyperglycemia may also augment thrombus formation.

**4. Location of lesions**

Proximal segment and ostial segment lesions are more commonly observed in patients with Diabetes. These lesions are associated with a lower risk of procedural success and a higher rate of major adverse cardiac events even after PCI. Non-insulin dependent diabetes mellitus was observed to have more left main coronary artery disease[99].

**FACTORS ALTERING THE SEVERITY OF CAD IN DIABETES MELLITUS**

**Sex**

In diabetes, women lose their cardio protection. Increased severity of disease in diabetic women has been noted in various studies[100-102]. Women with diabetes had 4 times more chance of developing cardiac failure (16% vs 3.8%) when compared to non-diabetic women.

Possible mechanisms[103] quoted for this increased mortality risk in female sex include

a) Low HDL in diabetic women
b) Insulin androgen interaction
c) Poorer collateral circulation
d) Diabetic cardiomyopathy has been noted more common in women

**Duration of diabetes and severity of CAD**

Extent of coronary artery disease in terms of stenosis percentage has been studied in several studies with respect to duration of diabetes. Many studies have shown that the severity of CAD is increased in individuals with longer duration of diabetes[104-108]. The proposed mechanism being diabetic individuals are being exposed to the risk factors even before the establishment of clinical diabetes.

**Lipids**

Hypercholesterolaemia was considered as a risk factor in addition to CAD in a study of 204 patients in japan[109]. Lipoprotein(a) concentration and triglyceride rich lipoprotein particles were considered as confounding factors affecting the severity of CAD in patients with diabetes mellitus[110].

# METHODOLOGY

## SOURCE OF DATA:

This study was undertaken in PSG hospitals, affiliated to PSG institute of medical sciences and research, Coimbatore, Tamil Nadu during the study period between august 2011 to December 2012. A total of 412 patients admitted with acute coronary syndrome in the study period who subsequently underwent coronary angiogram were included in the study.

## METHODOLOGY:

All patients were evaluated in detail as per their symptomatology, a detailed physical examination, routine blood investigations with blood sugar estimation and HbA1c, ECG and ECHO were done at admission. They were categorized into non-diabetics, diabetics and pre-diabetics according to their HbA1c levels. Diabetic patients were subcategorized according to their hbA1c levels (good control = <6.5, sub optimal control = 6.5-8.9, poor control = >9). Those patients in pre-diabetic range were evaluated with FBS, PPBS, subjected to oral GTT if necessary and subcategorized into impaired fasting glucose, impaired glucose tolerance or both. All patients were medically stabilised and subjected to coronary angiogram as an when it was indicated. The angiographic severity of the coronary artery disease was assessed using the Gensini score. Proper consent was obtained from individuals enrolled into the study. Ethical clearance was obtained as per institution norms. Statistical analysis was assessed using Mean ± standard deviation, Pearson's correlation coefficient, Chi square test and ANOVA tests using SPSS software.

## Inclusion Criteria:

- Patients admitted with acute coronary syndrome ( STEMI, NSTEMI , Marker positive unstable angina) who underwent invasive coronary angiogram were included in the study

## Exclusion Criteria:

- Patients with known ischemic heart disease and proven CAD.
- Patients with anaemia, renal failure or other known systemic illness.

# PROTOCOL OF THE STUDY

**Acute coronary syndrome**

**ENTRY POINT**

**DIABETIC CAD**
• Known diabetic•

**NON-DIABETIC CAD**
Not a known diabetic

**HISTORY**

- Typical/ atypical presentation of CAD (chest pain, dyspnea, sweating, abdomian pain, syncope )
- Presence / absence of diabetes
- Duration and control of diabetes
- Risk factors (Smoking / Family history of IHD/ hypertension)
- History of diabetic/ hypertensive complications
- Other significant history

**CLINICAL EXAMINATION**

- Stigmata of hypercholesterolemia
- Vital signs
- Pulse (look for rhythm disturbance)
- BP (look for hypertension/ hypotension)
- Cardiac status by Killip classification
- ECG (Type of CAD/ rhythm disturbance)

**PATIENT STABILIZATION**

**INVESTIGATIONS**

- Routine blood and urine
- RBS, FBS & PPBS
- HbA1c
- Blood urea, S.creatinine, Urine –Microalbuminuria, Assess nephropathy (if present)
- Lipid profile
- Look for dyslipidemia and risk category
- Fundus examination Diabetic/ hypertensive changes
- Cardiac enzymes : Trop T

**ESTABLISH DIAGNOSIS**

**Type of CAD:**

- STEMI AW / IW / IW + RV, NSTEMI, Unstable angina

**Echocardiography:**

- Regional wall motion abnormality
- Systolic dysfunction
- Diastolic dysfunction

**Angiography:**

- Gensini score – categorisation

**Observe Clinical Course**

**Complications** **No complications**

- LV dysfunction
- Rhythm disturbances
- Co-morbid conditions

## DEFINITIONS:

**Coronary Artery Disease (A.M.I) is defined in the presence of minimum 2 of following[34].**

1. Chest pain suggestive of Cardiac Origin.

[Retrosternal squeezing. Radiating, increases with exertion, not relieved byrest and nitrates and associated with sweating.]

2. Trop T positive.

3. Electrocardiographic changes.

This consists of ≥ 1 of the following.

a) ST segment elevation of more than 2mm from J Point in 2 related electric fields with typical evolutionary changes.

b) Presence of new pathologic Q waves in 2 related electric fields. [for Q-M.I.]

**c)** Non Q-M.I. with ST depression and T inversion

## DIABETES (ADA CRITERIA)

***Criteria for the diagnosis of diabetes[33]***

HbA1C > 6.5%.

or

FBS >126 mg/dl . ( Fasting is defined as no food/ caloric intake for at least 8 h )

or

2-h plasma glucose >200 mg/dl during an OGTT.

or

In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose >200 mg/dl.

***Categories of increased risk for diabetes (prediabetes)[33]***

FBS 100–125 mg/dl ( IFG )

or

2-h plasma glucose in the 75-g OGTT: 140–199 mg/dl (IGT)

or

HbA1C 5.7–6.4%

## Classification of Hypertension (JNC7)

| Blood Pressure classification | SBP mmHg | DBP mmHg |
|---|---|---|
| **Normal** | <120 | and <80 |
| **Prehypertension** | 120–139 | 80–89 |
| **Stage 1** | 140–159 | 90–99 |
| **Stage 2** | >160 | >100 |

## Classification of Lipid profile

*Third Report of the National Cholesterol Education Program (NCEP)*

| Total Cholesterol (mg/dL) | LDL Cholesterol (mg/dL) | Triglyceride (mg/dL) | Serum HDL Cholesterol (mg/dL) |
|---|---|---|---|
| <200 Desirable | <100 Optimal | <150 normal | <40 Low HDL |
| 200–239 Borderline High | 100–129 Near optimal | 150–199 borderline high | >60 High HDL |
| High >240 | above optimal 130–159 | 200–499 high | |
| | 160–189 High | >500 very high | |
| | >190 Very High | | |

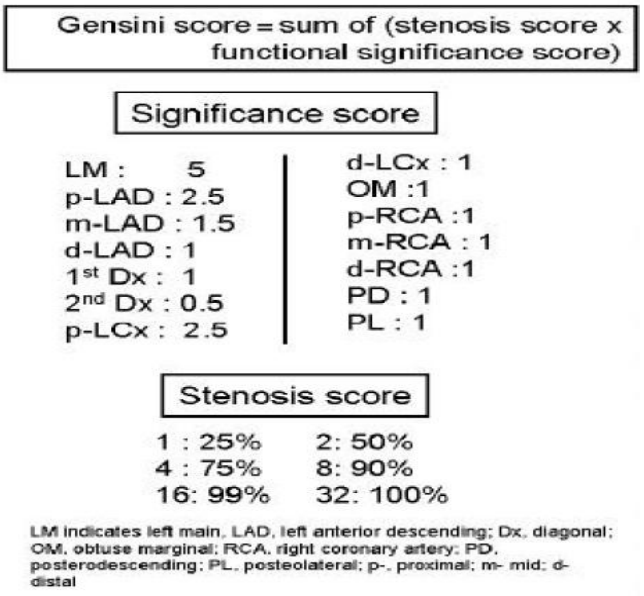
# Severity of CAD

**Gensini score** was used to assess the severity of CAD[17].

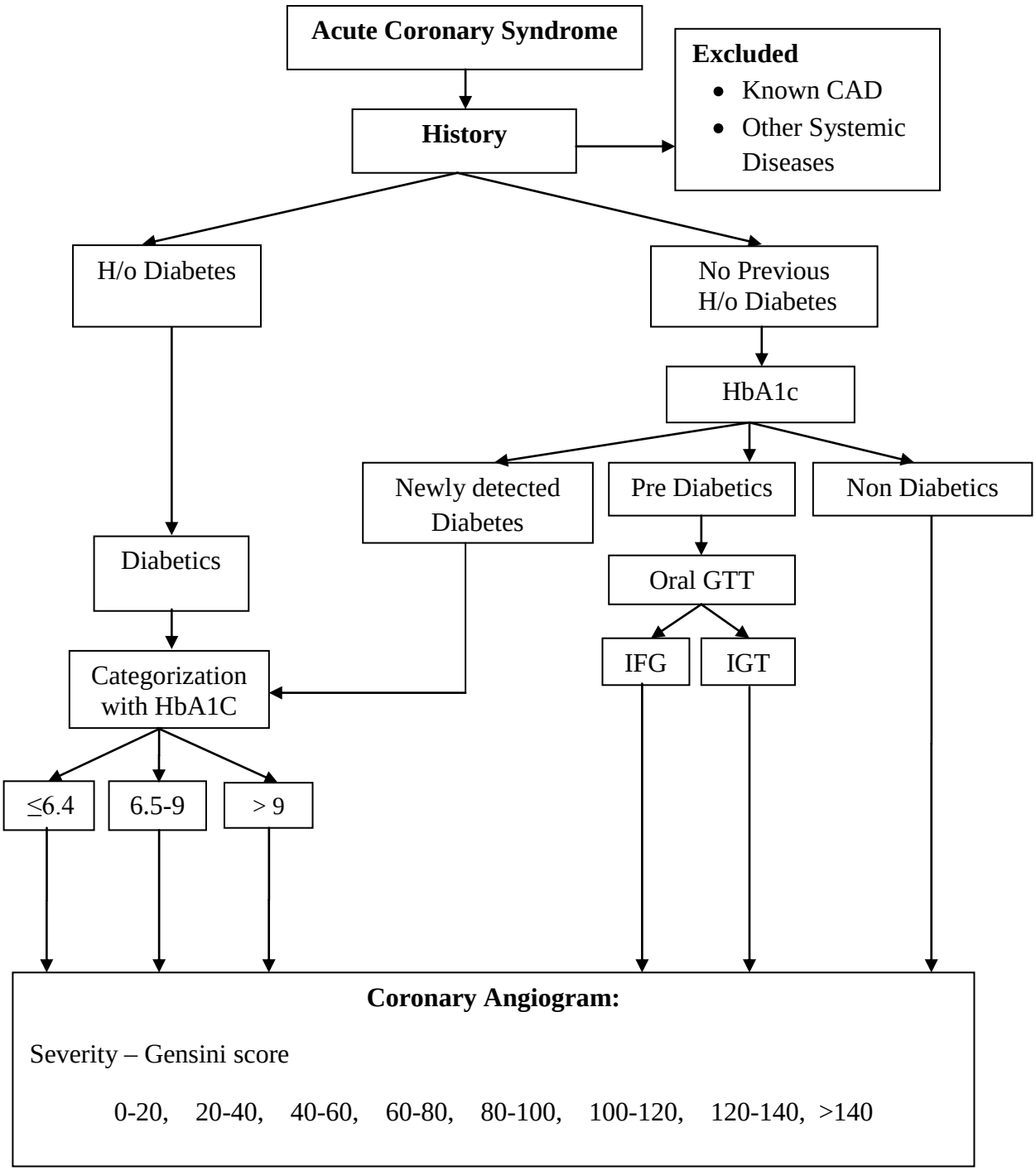
Specific score is used to assess the narrowing of the coronary artery. First the percentage of stenosis is assessed.

| Stenosis score | Percentage of occlusion |
|---|---|
| 1 | 1 – 25 |
| 2 | 26 - 50 |
| 4 | 51 - 75 |
| 8 | 76 - 90 |
| 16 | 91 - 99 |
| 32 | Complete occlusion |

This stenosis score is then multiplied by a factor according to the importance of the coronary artery. The multiplication factor for a left main coronary artery (LMCA) lesion is 5, 2.5 for proximal left anterior descending artery (LAD) and proximal circumflex artery (LCX) lesions, 1.5 for a mid-LAD lesion, and 1 each for distal LAD, mid LCX, distal CX and right coronary artery. The multiplication factor for any other branch is 0.5.



# FLOW CHART OF THE STUDY



# RESULTS AND OBSERVATION

There were 412 patients with first time ACS in the study population. Of them 213 were Diabetics, 123 were non-diabetics, and 76 were prediabetics

**CATEGORISATION IN THE STUDY GROUP**

**Table 1 Group distribution of study population**

| Group | Total number of cases | Percentage (%) |
|---|---|---|
| Diabetics | 213 | 51.7 |
| Prediabetics | 76 | 18.4 |
| Non diabetics | 123 | 29.9 |
| **Total** | **412** | **100** |

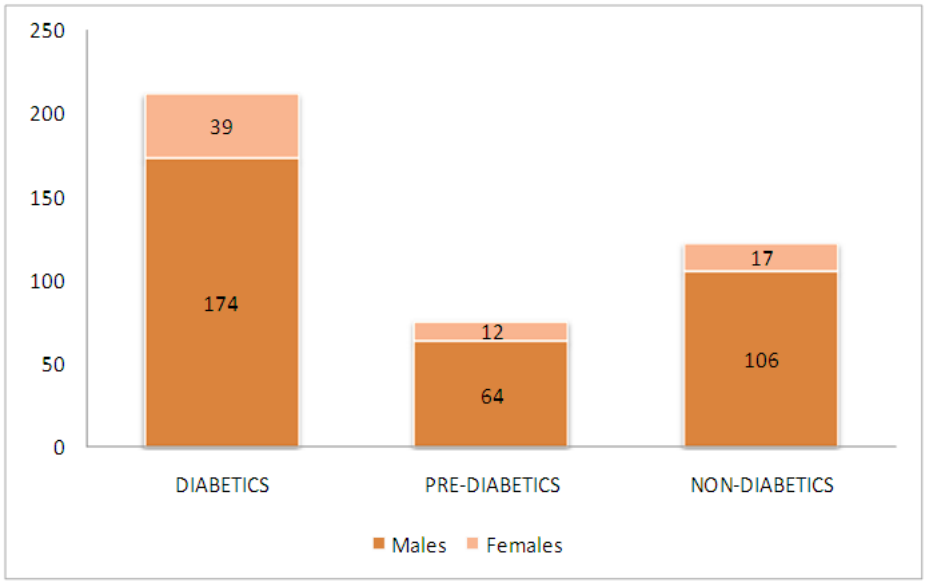
**SEX DISTRIBUTION AMONG STUDY GROUPS**

**Table 2 Sex wise distribution of study group**

| Group | Male (%) | Female (%) | Male : Female |
|---|---|---|---|
| Diabetics | 174 (81.7) | 39 (18.3) | 4.46:1 |
| Pre-Diabetics | 64 (84.2) | 12 (9.8) | 5.33:1 |
| Non-Diabetics | 106 (86.2) | 17 (13.8) | 6.23:1 |

There was male predominance in all the study groups, with the highest noted in non-diabetics with 6.23:1

**Figure 5: Sex distribution**




## AGE WISE DISTRIBUTION OF STUDY GROUPS

**Table 3 Mean age at presentation**

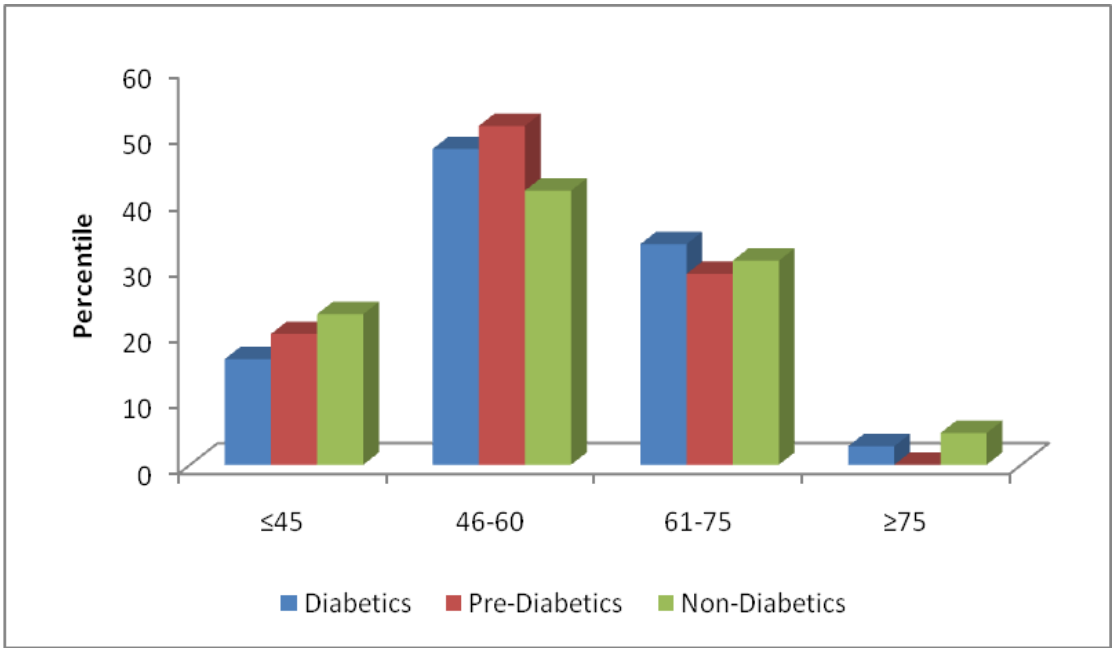
| Group | Mean Age |
|---|---|
| **Diabetics** | **56.3± 10.2** |
| **Non diabetics** | **54.5 ±12.2** |
| **Pre diabetics** | **54.4± 9.3** |

Mean Age at presentation was higher in diabetics with 56.3 years.

**Table 4 Age distribution of the study groups**

| Age in years | ≤45 | % | 46-60 | % | 61-75 | % | ≥75 | % | Total |
|---|---|---|---|---|---|---|---|---|---|
| Diabetics | 34 | **16** | 102 | **47.8** | 71 | **33.4** | 6 | **2.8** | **213** |
| Pre-Diabetics | 15 | **19.8** | 39 | **51.3** | 22 | **28.9** | - | **-** | **76** |
| Non-Diabetics | 28 | **22.8** | 51 | **41.5** | 38 | **30.9** | 6 | **4.8** | **123** |

**Figure 6: Age distribution of study groups**




In all the 3 groups, patients in age group between 46-60 years were mostly affected. There were no patients above 75 years in the prediabetic group. In patients above 61 years most of them were non-diabetics.

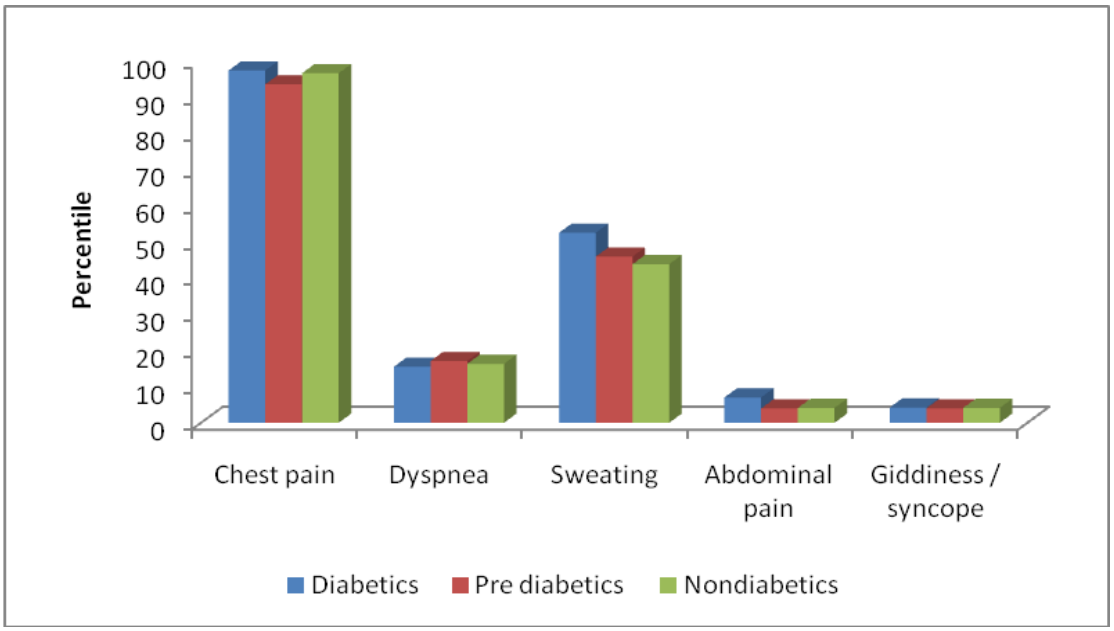
## SYMPTOM ANALYSIS OF STUDY GROUPS

**Table 5: Symptom analysis of study groups**

| Symptom | Diabetics | | Pre diabetics | | Nondiabetics | |
|---|---|---|---|---|---|---|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| **Chest pain** | 208 | **97.5** | 74 | **93.7** | 119 | **96.75** |
| **dyspnea** | 33 | **15.5** | 13 | **17.1** | 20 | **16.3** |
| **sweating** | 112 | **52.6** | 35 | **46** | 54 | **43.9** |
| **Abdominal pain** | 15 | **7** | 3 | **3.95** | 5 | **4.1** |
| **Giddiness / syncope** | 9 | **4.2** | 3 | **4** | 5 | **4.1** |

There were no notable differences in the presenting symptom among the study groups. Most common symptom being chest pain and sweating in all the 3 groups.

**Figure 7: Symptom analysis of study groups**



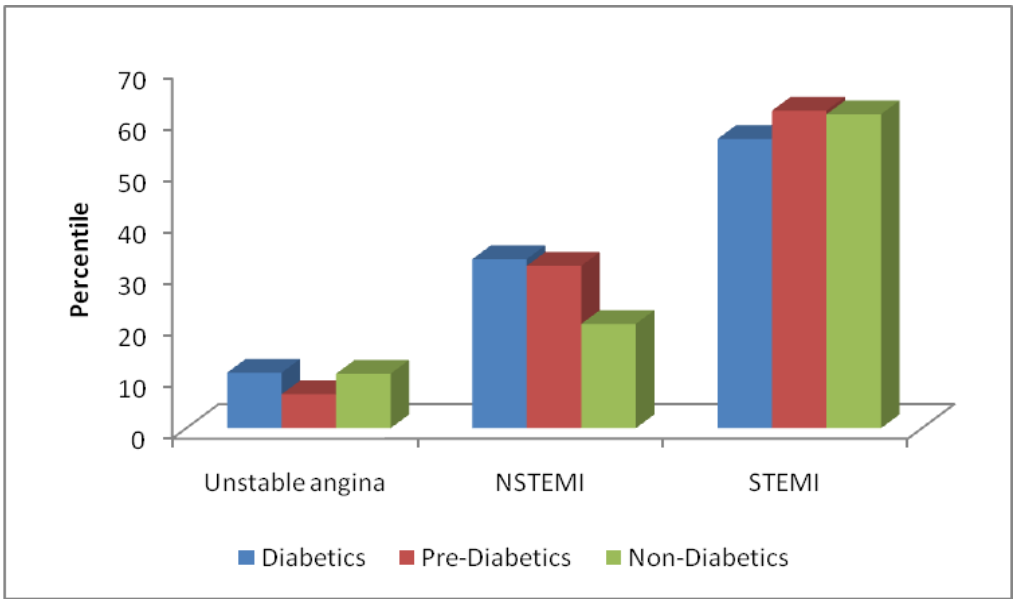
## ACS DISTRIBUTION

**Table 6: ACS distribution among study groups**

| Group | Unstable angina | NSTEMI | STEMI | total | Distribution of STEMI cases | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | AW | IW | IW+ RV | LW |
| **Diabetics** | 23 **10.8%** | 70 **32.9%** | 120 **56.3%** | 213 | 68 | 40 | 9 | 3 |
| **Pre-Diabetics** | 5 **6.6%** | 24 **31.6%** | 47 **61.8%** | 76 | 25 | 19 | 2 | 1 |
| **Non-Diabetics** | 13 **10.6%** | 25 **20.3%** | 85 **69.1%** | 123 | 59 | 21 | 4 | 1 |
| | | | | | | | | P value 0.059 |

Of the ACS distribution, majority of the patients in all the 3 groups presented with ST elevation myocardial infarction. STEMI presentation was particularly higher in Non-diabetics, compared to other groups. Whereas NSTEMI and unstable angina were higher in diabetic group. However it failed to prove statistical significance.

**Figure 8: Distribution of ACS among the study groups**



## RISK FACTORS IN STUDY GROUPS

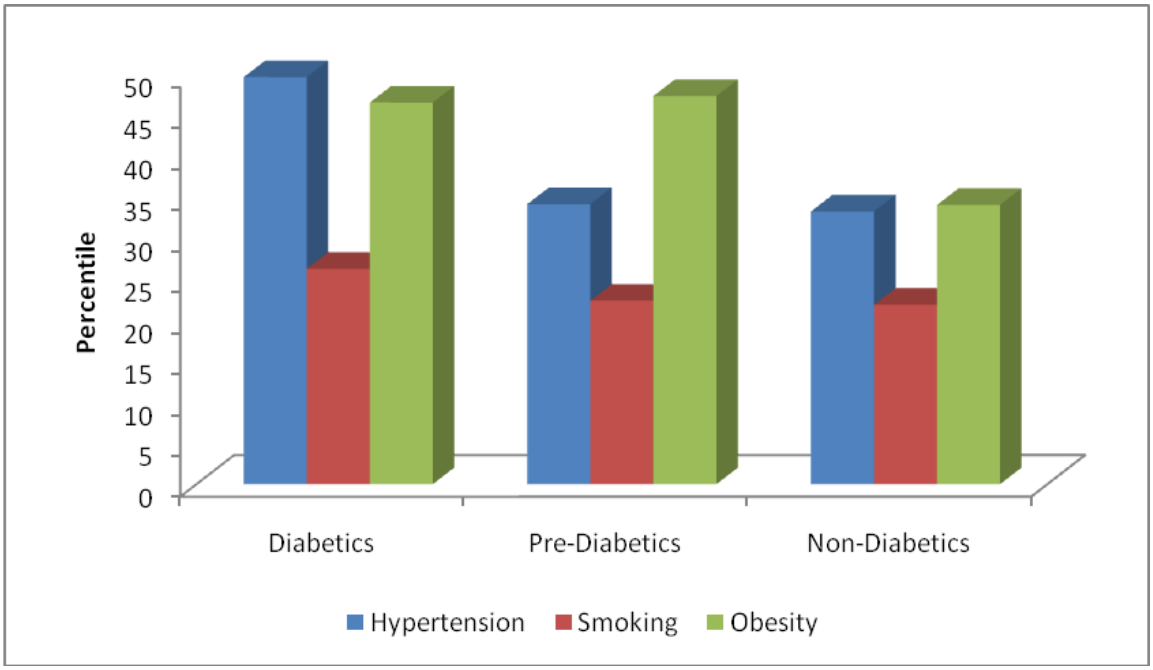
**Table 7: Prevalence of risk factors in study groups**

| Risk factor | Diabetics | Pre-Diabetics | Non-Diabetics |
|---|---|---|---|
| **Hypertension** | **106 (49.7%)** | **26 (34.2%)** | **41 (33.3%)** |
| **Smoking** | **56 (26.3%)** | **17 (22.4%)** | **27 (21.9%)** |
| **Obesity** | **95 (46.6%)** | **36 (47.4%)** | **42 (34.1%)** |

P value 0.002

Obesity was more prevalent in pre diabetics, followed by diabetics. Hypertension was more prevalent in diabetics. There was no much variation in the prevalence of smoking in the study groups

**Figure 9: Risk factors among study groups**



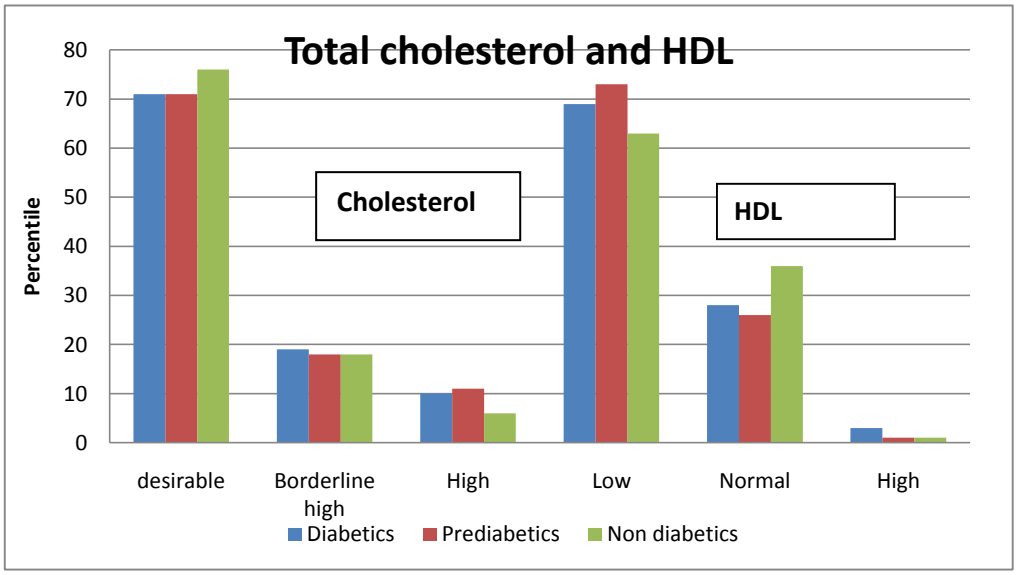
## LIPID ABNORMALITIES IN THE STUDY GROUPS

**Table 8: Total cholesterol and Triglyceride Levels in Study groups**

| | Total cholesterol | | | HDL | | |
|---|---|---|---|---|---|---|
| | **Desirable (%)** | **Borderline High (%)** | **High (%)** | **Low (%)** | **Normal (%)** | **High (%)** |
| **Diabetics** | 150 (71) | 40 (19) | 21 (10) | 148 (69) | 59 (28) | 6 (3) |
| **Prediabetics** | 54 (71) | 14 (18) | 8 (11) | 55 (73) | 20 (26) | 1 (1) |
| **Non Diabetics** | 94 (76) | 22 (18) | 7 (6) | 78 (63) | 44 36) | 1 (1) |

There was no much observational variation in the levels of total cholesterol in the study groups. Whereas lower levels of HDL cholesterol was noted more in Prediabetics. Very high levels of LDL cholesterol was noted in 9% of prediabetics and 6% of Diabetics.

**Figure 10: Total cholesterol and Triglyceride Levels in Study groups**

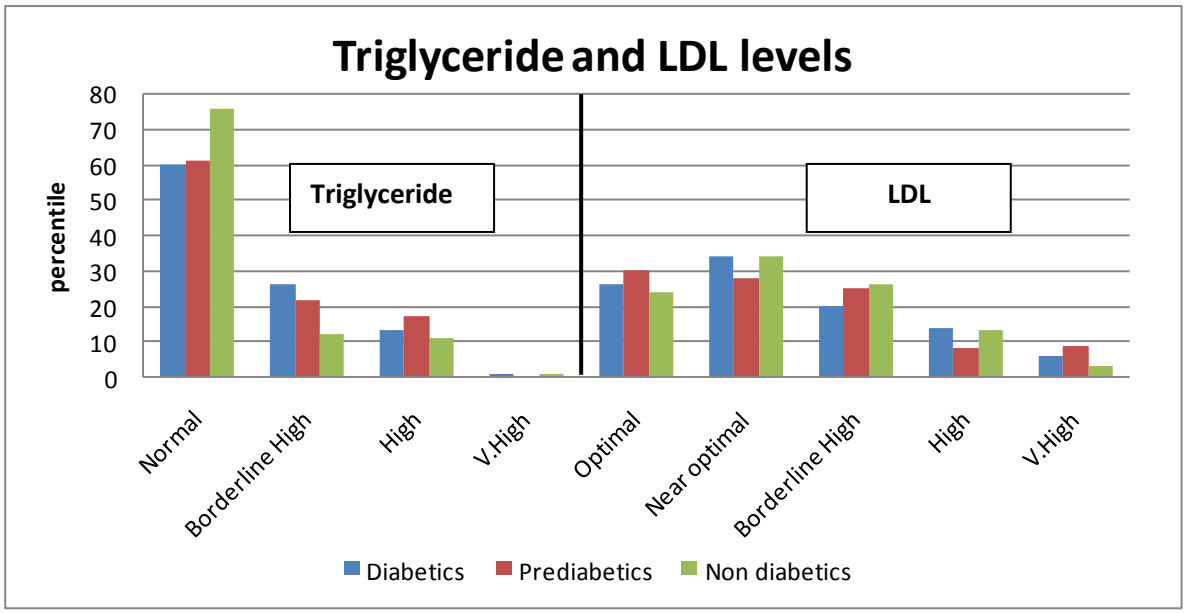


## TRIGLYCERIDE AND LDL LEVELS

**Table 9: Triglyceride and LDL levels**

| | Triglyceride | | | | LDL levels | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Normal** | **Border line high** | **High** | **Very high** | **Optimal** | **Near optimal** | **Border line high** | **High** | **Very high** |
| **Diabetics** | 128 (60) | 55 (26) | 28 (13) | 2 (1) | 54 (26) | 74 (34) | 43 (20) | 29 (14) | 13 (6) |
| **Prediabetics** | 46 (61) | 17 (22) | 13 (17) | 0 (0) | 23 (30) | 21 (28) | 19 (25) | 6 (8) | 7 (9) |
| **Non Diabetics** | 94 (76) | 15 (12) | 13 (11) | 1 (1) | 30 (24) | 42 (34) | 32 (26) | 16 (13) | 3 (3) |

**Figure 11: Distribution of Triglyceride and LDL levels**



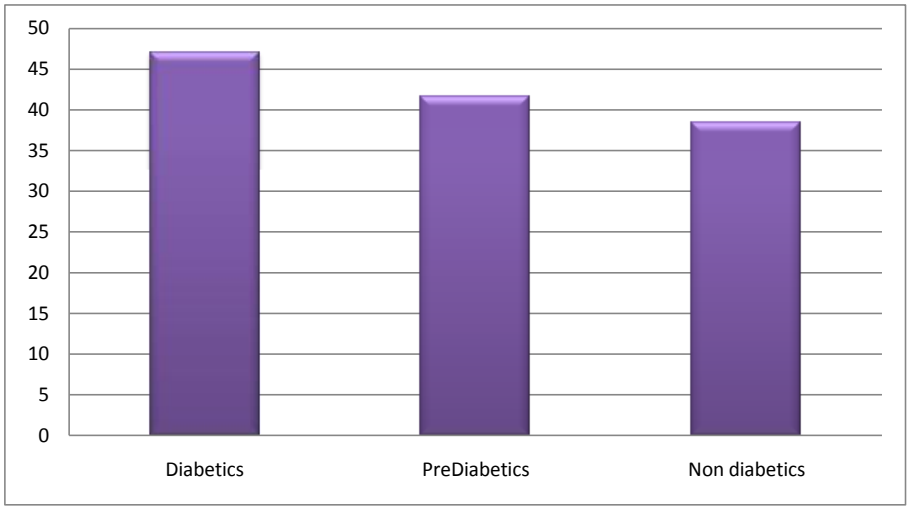
## ANGIOGRAPHIC SEVERITY OF CAD IN DIFFERENT GROUPS

**Table 10: Angiographic severity of CAD in different groups**

| Group | Mean HbA1c | Mean Gensini score | P value |
|---|---|---|---|
| Diabetics | 8.23±1.88 | 47.1±31.1 | 0.049 |
| PreDiabetics | 6±0.19 | 41.5±25.1 | |
| Non diabetics | 5.40±0.30 | 38.45±33.9 | |

The severity of CAD was higher in Diabetics with a mean gensini score of 47.1, followed by Prediabetics with 41.5 and Non diabetics with comparatively lower involvement of severity of CAD with a mean gensini score of 38.5. (P value 0.049)

**Figure 12: Angiographic severity of CAD in different groups**



## DISTRIBUTION OF GENSINI SCORE IN PREDIABETIC GROUP

**Table 11: Distribution of gensini score in prediabetic group**

| Group | Total patients (% among prediabetics) | Mean gensini score |
|---|---|---|
| **IFG** | 57 (75) | 44.4±25.3 |
| **IGT** | 58 (76.3) | 41.03±25.7 |
| **IFG & IGT** | 43 (56.5) | 43.86±26.85 |

**P value 0.12**

Around 56% of patients in prediabetic group had both IFG and IGT. There was no much statistically significant difference in severity of CAD among these groups.

## DURATION OF DIABETES AND GENSINI SCORE IN THE DIABETIC GROUP

The severity of CAD was higher in patients with diabetes for more than 5 years. There was statistically significant correlation between the duration of diabetes and severity of CAD in diabetics.

**Table 12: Duration of diabetes and gensini score in the diabetic group**

| **Duartion** | Newly detected | 0-1 yrs | 1-3yrs | 3-5 yrs | 5-10yrs | >10yrs |
|---|---|---|---|---|---|---|
| **Diabetic group** | 56 | 14 | 33 | 34 | 40 | 36 |
| **Mean gensini score** | 34.5 | 27.4 | 26.8 | 42.5 | 57.8 | 85 |

Correlation coefficient r=0.69, p=<0.001

**Figure 13: Duration of diabetes and gensini score in the diabetic group**

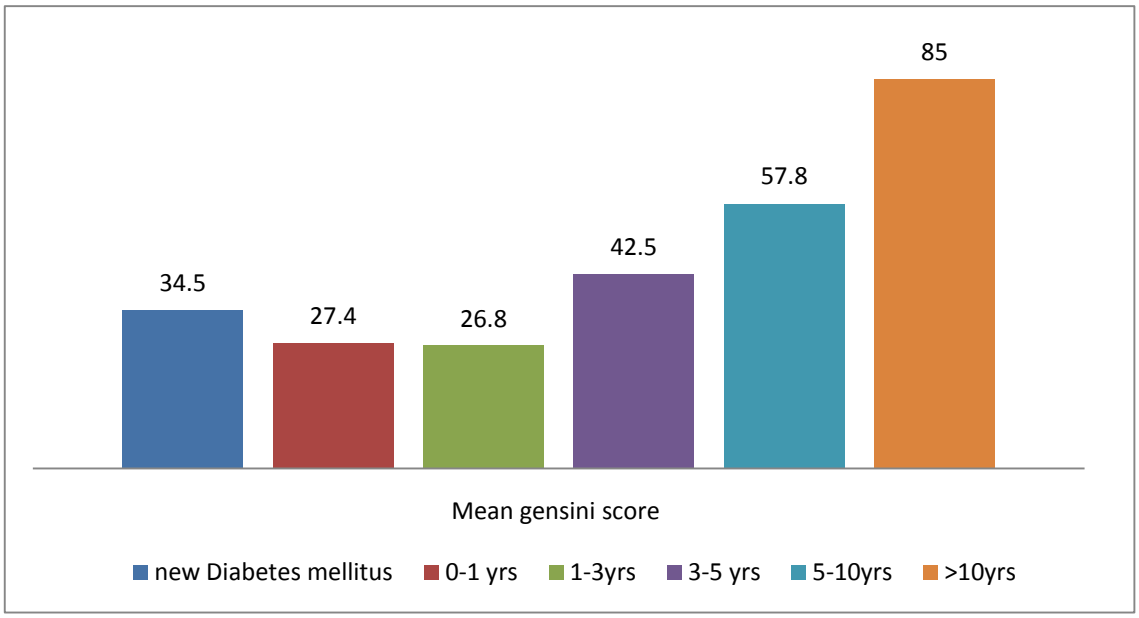
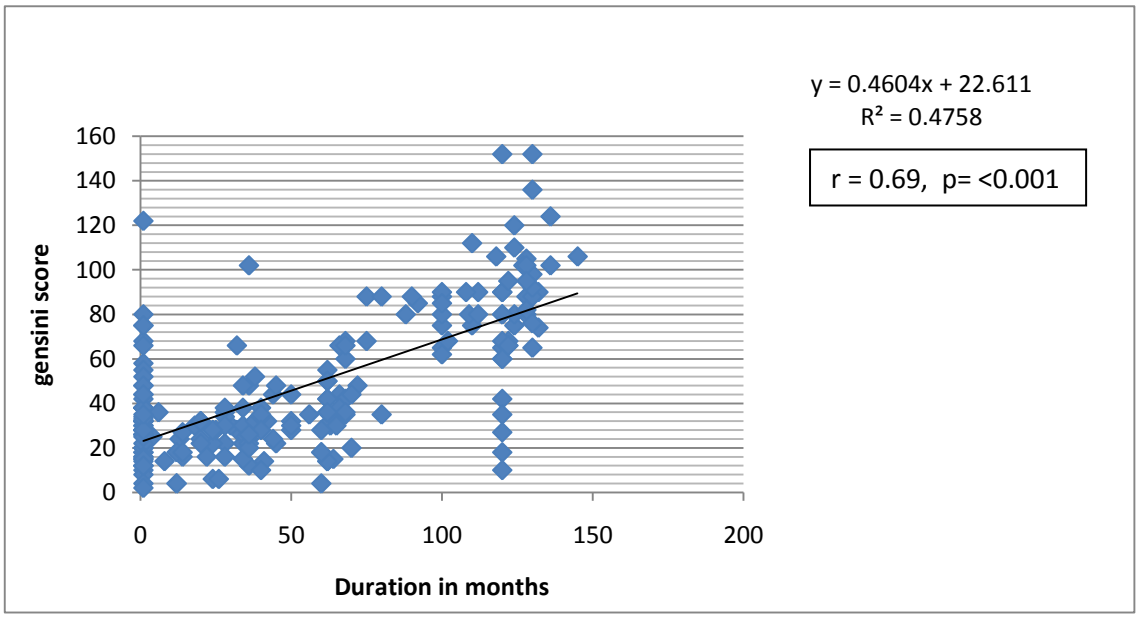



**Figure 14: Correlation between duration of diabetes and gensini score in diabetics**



**ASSOCIATION BETWEEN GLYCEMIC CONTROL (HBA1C) AND GENSINI SCORE IN DIABETICS**

**Table 13: Association between glycemic control (HbA1c) and gensini score in Diabetics**

| Glycemic control | hbA1c | Total cases | Mean gensini score | P value |
|---|---|---|---|---|
| **Good** | <6.5 | 14 | 53.2± 27.8 | 0.484 |
| **Suboptimal** | 6.5-8.9 | 141 | 45.1 ±30.9 | |
| **Poor** | >9 | 58 | 50.4 ±31.6 | |

There was no statistically significant correlation with the glycemic control as assessed by HbA1c levels to the severity of CAD.

**Figure 15: Correlation between HbA1c and gensini score in diabetics**

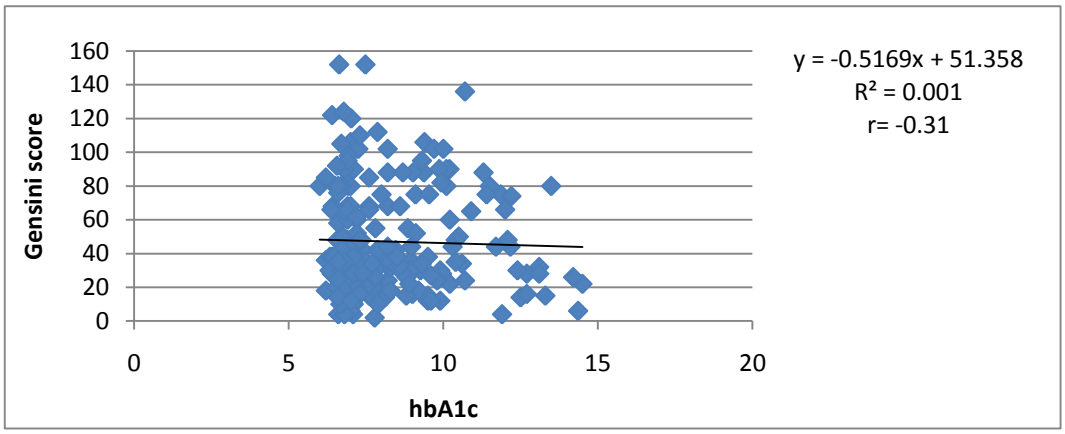
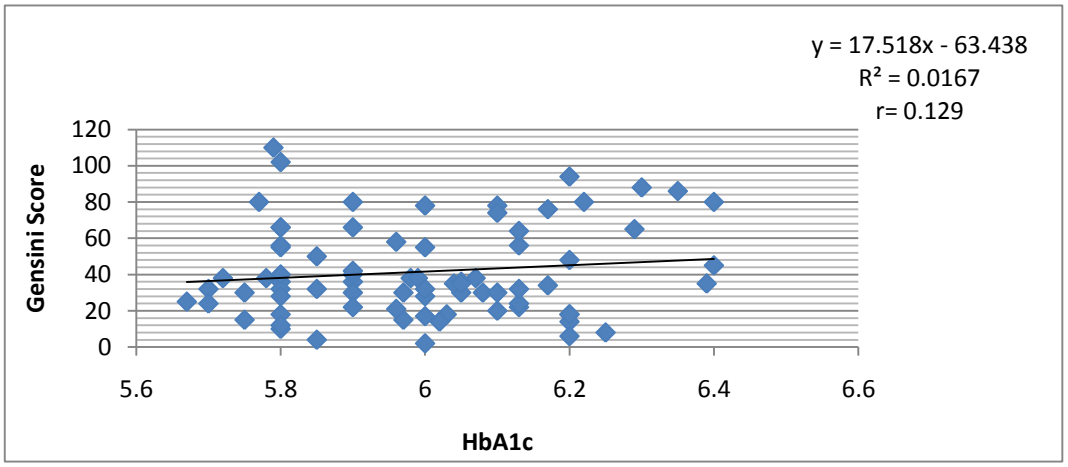



**Figure 16: Correlation between HbA1c and gensini score in prediabetics**



**BLOOD SUGAR LEVELS AMONG THE GROUPS**

**Table: 14 Blood sugar levels among the groups**

| Group | Mean Random blood sugar (mg/dl) | Mean Fasting blood sugar (mg/dl) | Mean post prandial blood sugar (mg/dl) |
|---|---|---|---|
| **Diabetics** | 205±86.7 | 150.9±58.5 | 188.5±55.3 |
| **Prediabetics** | 134.7±27.4 | 110.3± 13.38 | 148.9±16.6 |
| **Non diabetics** | 120± 31.7 | 111.35±93.69 | 134.1±17.11 |

**CORRELATION COEFFICIENT BETWEEN SUGAR LEVELS AND GENSINI SCORE**

**Table 15: Correlation coefficient between sugar levels and gensini score**

| Group | Random blood sugar (mg/dl) | Fasting blood sugar (mg/dl) | Post prandial blood sugar (mg/dl) |
|---|---|---|---|
| **Diabetics** | 0.0001 | 0.0079 | 0.0043 |
| **Prediabetics** | 0.211 | 0.179 | 0.127 |
| **Non diabetics** | 0.069 | 0.012 | 0.008 |

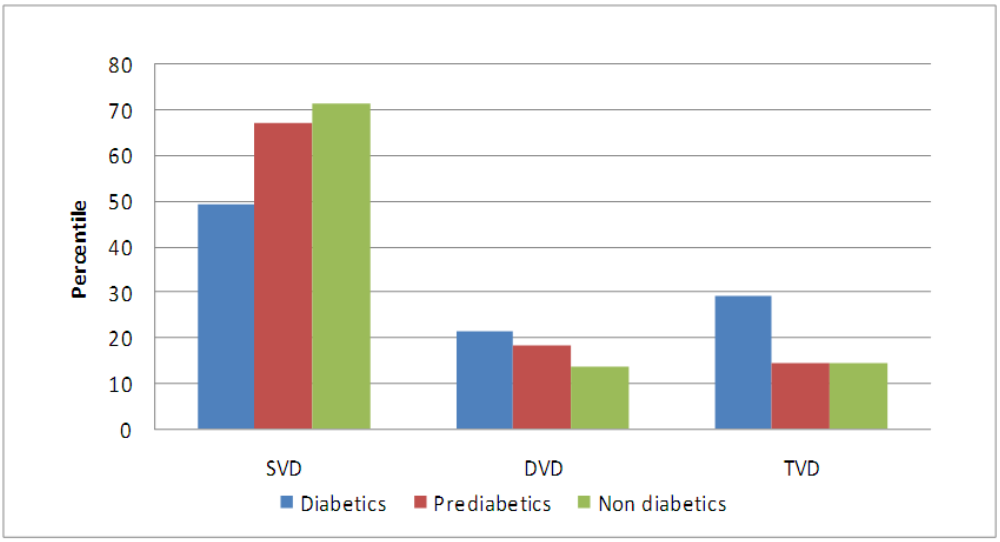
The mean blood sugar levels at admissions were higher in the diabetic group. There was a direct positive correlation between blood sugar levels and the gensini score in all the 3 groups.

## CORONARY ARTERY INVOLVEMENT IN DIFFERENT GROUPS

**Table 16: Coronary artery involvement in different groups**

| | Single vessel | % | Double vessel | % | Triple vessel | % | P value |
|---|---|---|---|---|---|---|---|
| **Diabetics** | 105 | 49.3 | 46 | 21.6 | 62 | 29.1 | <0.001 |
| **Prediabetics** | 51 | 67.1 | 14 | 18.4 | 11 | 14.5 | |
| **Non Diabetics** | 88 | 71.54 | 17 | 13.8 | 18 | 14.6 | |

**Figure 17: Coronary artery involvement in different groups**




Presence of Triple vessel disease was 29.1% in diabetics and 14.5% and 14.6% among prediabetics and non diabetics respectively. Single vessel disease was seen more in non-diabetics. Single vessel disease was found in 71.54% of non diabetics and 49.3% of diabetics. Triple vessel disease was more common in diabetics, whereas single vessel disease was more common in non-diabetic and pre-diabetics. These observations were statistically significant with a p value of <0.001.

# DISCUSSION

A total of 412 patients admitted with first time acute coronary syndrome during the study period were analysed. Of which 213 patients were diabetics and 123 were non-diabetics and 76 were pre-diabetics. Majority of the patients were diabetics. We compared the mean age, sex, risk profile, lipid abnormalities, clinical profile, type of ACS among each group. Correlation between glycemic status according to FBS, PPBS, HbA1c levels and severity of CAD assessed by gensini score were analysed. As with other studies diabetics were the majority in our study.

## AGE AND SEX DISTRIBUTION

The mean age of presentation in diabetics was 56.3± 10.2 years, non-diabetics 54.5 ±12.2 years, and pre-diabetics 54.4± 9.3 years. There was no much difference in the mean age of presentation in the study groups. In all the 3 groups most of the patients were in the age range between 46 to 60 years. In patients less than 45 years, non-diabetics were more affected than diabetics. In the *GUSTO-1*[111]trial, it was observed that diabetic patients were older when compared to non diabetic patients, similar results were observed in our study.

Males were more affected in all the three groups, with the highest noted in non-diabetics with a sex ratio of 6.23:1 and lowest ratio in diabetics with 4.46:1. It is obvious that diabetic females had more prevalence of CAD when compared to pre-diabetics and non-diabetics. Pre-menopausal females in general have protection against IHD, but this cardio protection is lost in the presence of diabetes.

## SYMPTOM ANALYSIS

Chest pain followed by sweating was the predominant symptom in all the 3 groups. Atypical symptoms such as abdominal pain, giddiness were higher in the diabetic group.

In a study by soler et al[112] diabetic patients had more atypical presentations of ACS with heart failure, vomiting, collapse, confusion or CVA, which led to increased risk for them going undiagnosed and increased mortality.

## PATTERN OF ACS IN STUDY POPULATION

In all the 3 groups, ST elevation myocardial infarction was the most common type of ACS. STEMI was particularly higher in the non-diabetic (69.1%) and pre-diabetic group (61.9%). This may indirectly denote that prothrombotic mechanisms may be responsible for ACS among these groups. NSTEMI and unstable angina were higher in diabetic patients. Of the STEMI distribution, anterior wall MI was the most common type followed by inferior wall myocardial infarction in all the three groups.

## RISK FACTORS:

Of the risk factors studied, hypertension was more prevalent in the diabetic group. 49.7% of diabetic patients had hypertension. There was no much difference in the prevalence of hypertension among pre-diabetics and non-diabetics. Similar higher prevalence of hypertension among diabetics was noted in other studies (GUSTO-*l, Rancho Bernardo, UKPDS,* Gokhroo et al) [111-114]

Prevalence of smoking was also high in the diabetic group. Obesity was higher in both pre-diabetic and diabetic patients. Obesity was observed in 47.4% and 46.6% of pre-diabetic and diabetic patients respectively[115].

## LIPID ABNORMALITIES

In comparing the total cholesterol levels, 19% of diabetics and 18% of pre-diabetics and 18% of non-diabetics were in the borderline high risk category. Higher levels of total cholesterol were observed in 10%, 11%, 6% of patients in diabetic, pre-diabetic and non-diabetic groups respectively.

In comparing the HDL levels, HDL levels were lower in 69% and 73% of diabetics and pre-diabetics respectively. Whereas, only 63% of patients in non-diabetic group had low HDL levels.

Hypertriglyceridemia was noted to be higher in the pre-diabetic group (17%), whereas only 13% of diabetic patients and 11% of non-diabetic patients had high triglycerides (200-499mg/dl). Very high levels i.e. levels more than 500mg/dl was noted in 2 diabetic patients (1%) and 1 non diabetic patient (1%).

In comparing LDL levels, percentage of patients with higher levels (i.e. LDL 160-189mg/dl) in diabetic, pre-diabetic, and non-diabetic groups were 14%, 8% & 13% respectively. Very high levels (i.e. >190mg/dl) were observed in 9% of pre-diabetics, followed by 6% in diabetic group and 3% in non-diabetic group. A role for LDL in diabetic patients in promoting coronary heart disease in recent clinical trials, e.g., the Scandinavian Simvastatin survival Study (4S)[116,117], the Cholesterol and recurrent Events (CARE) trial[118,119], and the Long-Term Intervention with Pravastatin in Ischemic Disease (LIPID)[120] has been well established. All these trials have shown that aggressive LDL-lowering therapy reduces recurrent CHD events in patients with diabetes.

## SEVERITY AMONG DIABETICS:

Mean HbA1c levels in diabetics was 8.23±1.88, and 6±0.19 in pre-diabetic groups**.** We have used gensini score to estimate the severity of coronary artery disease. This gives a greater detail of assessment of CAD and does not ignore trivial lesions. Severity of CAD was higher in diabetics with a mean gensini score of 47.1±31.1, followed by pre-diabetics with a mean score of 41.5 ±25.1. Non diabetic patients had lesser severity of CAD with a mean score of 38.5±33.9. Our study is consistent with other studies, depicting higher severity of CAD in diabetics than in non diabetics. Results of other studies are shown in table

**Table 17: Similar studies comparing severity of CAD**

| Principle investigator | Number of cases in study | Results |
|---|---|---|
| Calton et al[121] | 75 | Higher score, more three vessel |
| Natali et al[122] | 2253 | Higher score, greater effect on female patients |
| Hamby et al[123] | 100 | Higher score, more three vessel |
| Pajunen et al[124] | 57 IDDM patients | More severe extensive and distaldisease |
| Thomas et al [125] | 59 | More severe disease |
| Abadie et al[126] | 36 | No difference |
| Krishnaswami S et al[127] | 516 | More severe disease and more multivessel disease |
| Mahdi moosavi et al[128] | 50 | More severe disease and more multivessel disease |
| Peppes et al[129] | 115 | More severe disease |

## SEVERITY BY NUMBER OF VESSELS

Multi vessel involvement was more in diabetics. 29.1% of diabetics had triple vessel disease, whereas only around 14% of pre-diabetic and non-diabetic patients had triple vessel disease. 71.5% of non-diabetic patients and 67.1% of pre-diabetic patients had single vessel disease, whereas only 49.3% of diabetics presented with single vessel disease. Pre-diabetics also had a trend towards single vessel disease. There are a number of studies showing higher involvement of multi vessel disease in Diabetes[123,127,128]. Similar results have been found in other studies using gensini score[121-123].

## SEVERITY AMONG PREDIABETICS

In our study we have quantitatively assessed the severity of CAD by using gensini score. There are hardly any studies available in pre-diabetics to postulate the extent of severity of CAD. Our study did not show any significant difference in the severity of CAD among pre-diabetics and non-diabetics. It has been well studied and proved that diabetic patients have more severe CAD. But no such major studies are available with pre-diabetic patients to show a higher severity of CAD. Of the pre-diabetic group in our study, 57 cases (75%) had impaired fasting glucose, 58 cases (76.3%) had impaired glucose tolerance and 43 cases (56.5%) had both impaired fasting glucose and impaired glucose tolerance. There was no statistically significant difference in severity of CAD among these groups. Comparatively patients with isolated IFG had a higher gensini score. However patients with IFG, IGT and combined IFG & IGT had higher scores compared to non-diabetics. Yan et al[130] showed higher severity of CAD in pre-diabetics compared to diabetics, However in his study patients with combined IFG & IGT had more severe disease compared to isolated IFG & IGT.

Pre-diabetic patients are at increased risk of death due to CAD[131]. This is chiefly attributed to the fact that most of the ACS in pre-diabetic patients was due to thrombus formation at sites of a vulnerable plaque. The first abnormality noted in patients with insulin resistance is IFG (or impaired glucose tolerance). The presence of IFG usually accompanies long-standing insulin resistance. Many prospective studies[132,133] show that IFG or IGT is a risk factor for CVD, the degree of independence as a risk factor, however, is uncertain.

## DURATION OF DIABETES

Of the 213 diabetic patients, 56 patients were newly diagnosed to have diabetes. The mean duration of diabetes was 53 months in the diabetic group. It was observed that the severity of CAD was higher in patients who had longer duration of diabetes. Patients with long standing diabetes (i.e >10 years) had more severe CAD with a mean score of 85. There was a positive linear correlation between the duration of diabetes and severity of CAD. This was statistically significant. [Correlation coefficient r = 0.69, p= <0.001]. Studies by Tahir et al[134] & Syvanne et al[35] also found a positive linear correlation with duration of diabetes and severity of CAD.

## GLYCEMIC CONTROL

Diabetics with good glycemic control (i.e. HbA1c level<6.5) had a mean gensini score of 53.2±27.8. Patients with suboptimal control (hbA1c 6.5-8.9) and poor control (HbA1c>9) had a mean gensini score of 45.1±30.9 and 50.4±31.6 respectively. But this was statistically insignificant. When comparing the association between HbA1c levels to the severity of CAD in diabetic patients, there was no statistically significant correlation between them. But among pre-diabetics there was a positive linear correlation identified between the HbA1c levels and gensini score [correlation coefficient r=0.129, p=<0.01]. Tahir[134] and

Ayhan et al[136] had found positive linear correlation between hbA1c levels and severity of CAD in diabetes patients, our study did not show any relation between them.

The mean blood glucose levels at admission were higher in the diabetic group with 205±86.7mg/dl. Similarly mean fasting blood sugar levels were also higher in the diabetic group. 21 non diabetic patients had blood sugar levels >140mg/dl at admission, which could be due to stress hyperglycemia. There was a significant positive linear correlation between FBS, PPBS, presenting RBS and gensini score in all the 3 study groups. This implies that hyperglycemia is directly associated with more severe CAD.

# LIMITATIONS OF STUDY

1. Number of patients in the study is small. Hence more studies on pre-diabetics and non-diabetics are needed in future
2. Duration of study is short, Hence follow up of patients was not included in the study
3. Possible underlying mechanism (such as insulin resistance, pro-thrombotic work up) in Pre-diabetic patients was not studied. Large prospective studies in pre-diabetic patients are needed in future for better understanding and planning management strategies.

# CONCLUSION

1. A total of 412 patients were studied, of which majority of the patients were diabetics (51.7%)
2. Male predominance was noted in all the study groups
3. Mean Age of presentation was 56.3± 10.2 among diabetics, 54.5 ±12.2 among non-diabetics and 54.4± 9.3 among pre-diabetics. There was no much difference in mean age of presentation among study groups. Patients with age range between 46-60 years were commonly affected in all the study groups.
4. Chest pain and sweating were the common presenting symptom in all groups
5. STEMI was comparatively higher in non-diabetics. However this was statistically insignificant.
6. Hypertension was more among diabetics, whereas obesity was higher in both Pre-diabetics and diabetics.
7. Diabetics had more prevalence of Low HDL. 9% and 6 % of Pre-diabetics and diabetics had very high LDL levels respectively.
8. Diabetics had more severe CAD with a gensini score of 47.1 ±31.1, followed by Pre-diabetics with a gensini score of 41.5±25.1. Non-Diabetics had comparatively less severe CAD with a gensini score of 38.45±33.9.
9. Single vessel disease was more in pre-diabetics and non-diabetics. Whereas diabetics had more triple vessel disease.
10. There was no significant difference in the severity of CAD among Pre-diabetic patients with IFG alone, IGT alone and combined IFG and IGT.
11. Patients with diabetes had a significant positive linear correlation between duration of diabetes and severity of CAD.

12. There was no statistically significant correlation between HbA1c levels and severity of CAD in diabetics.
13. Presenting blood sugar levels was found to have significant positive linear correlation with severity of CAD in all the three groups. This finding was more consistent in pre-diabetic patients.

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# ANNEXURE I

# LIST OF ABBREVATIONS USED

| | |
|---|---|
| CAD | : Coronary Artery Disease |
| DM | : Diabetes Mellitus |
| NIDDM | : Non Insulin Dependent Diabetes Mellitus |
| NCEP | : National Cholesterol Education Program |
| ATP | : Adult treatment panel |
| VLDL | : Very Low Density Lipoprotein |
| LDL | : Low Density Lipoprotein |
| HDL | : High Density Lipoprotein |
| HT | : Hypertension |
| HbA1C | : Glycosylated Haemoglobin |
| CVD | : Cardiovascular disease |
| ACS | : Acute coronary Syndrome |
| ADA | : American diabetes association |
| GDM | : Gestational diabetes mellitus |
| FBS | : Fasting blood sugar |
| PPBS | : Post prandial blood sugar |
| OGTT | : Oral glucose tolerance test |
| RBS | : Random blood sugar |
| MI | : Myocardial infarction |
| cTn | : Cardiac Troponin |

URL : Upper reference limit

LBBB : Left bundle branch block

PCI : Percutaneous coronary intervention

ECG : Electro cardiogram

CABG : Coronary artery bypass graft

IFG : Impaired fasting glucose

IGT : Impaired glucose tolerance

FFA : Free fatty acid

VSMC : Vascular smooth muscle cell

CHD : Coronary heart disease

NO : Nitric oxide

STEMI : ST elevation myocardial infarction

NSTEMI : Non ST elevation myocardial infarction

IHD : Ischemic heart disease

CVA : Cerebro-vascular accident

VCAM : Vascular cell adhesion molecule

PAI : Plasminogen activator inhibitor

# ANNEXURE II

## Case Proforma:

Name : Age : sex:

Op.no: IP.*no:* *unit:*

*D.O.A:* D.O.D:

Duration of stay:

Diagnosis: AW IW LW STEMI / NSTEMI

WP: Killip :

**HISTORY**

Typical/ atypical presentation of CAD: chest pain, dyspnea, sweating, abdomian pain, syncope )

DM : Yes / No Duration : …….. yrs 0-3 , 4-7, 7-10, >10 Newly detected

Treatment details : Not on treatment / Diet / OHA / OHA + insulin / Insulin

Risk factors : smoking ( yrs ) / family history / tobacco chewing / DLP / HT ……yrs

History of Diabetic / hypertensive complications :

Other significant history

## Clinical Examination

PR : BP : RR :

Ht: Wt BMI WH ratio

CVS – Features of LV dysfunction : present / absent

ECG : STEMI AW IW LW PW NSTEMI

ECHO : RWMA : LAD / LCX / RCA / Global LV EF : <30 / 30- 40 / 40-50 / >50

**Investigations :**

Hb Ur Cr K+ Trop T

FBS PPBS HbA1c : < 5.7 5.7-6.4 6.5-7.5 > 7.5

Oral GTT : o hr = 120 mins :

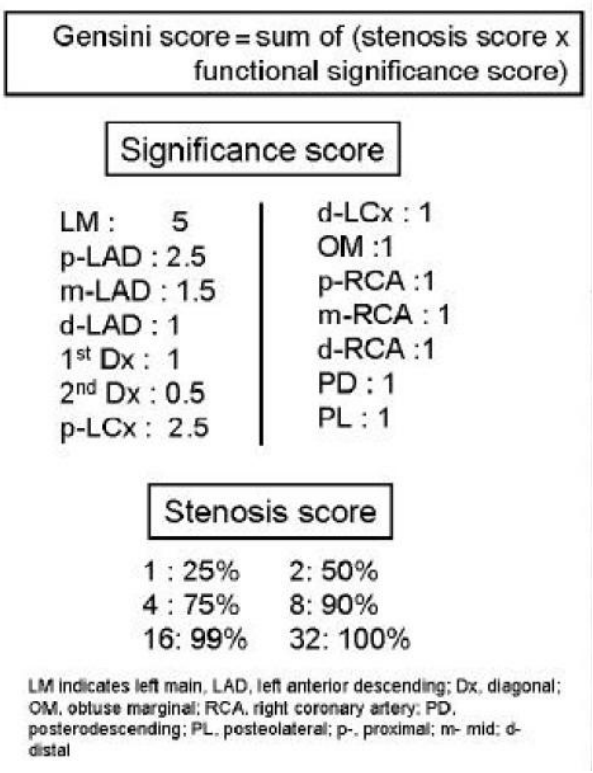
Chol:

TGl:

HDL:

LDL:

Angiography : LMCA / LAD / LCX / RI / RCA / SVD / 2VD / TVD / LMCA




**Gensini score:**

0-20 20-40 40-60 60-80 80-100 100-120

120-140 140-160 >160

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| amala doss | i12016441 | 60 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 188 | 132 | 199 | | 7.1 | 87 | 98 | 28 | 53 | 63 | 1 | 10 |
| ammasaikal | i12018664 | 68 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 568 | 274 | 302 | | 7.56 | 226 | 59 | 52 | 112 | 47 | 3 | 30 |
| andal | i12022086 | 58 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5 | | 1 | | 24 | 265 | 155 | 175 | | 14.36 | 223 | 190 | 75 | 124 | 48 | 1 | 6 |
| angathal | i12015950 | 66 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | | 1 | | 32 | 188 | 117 | 168 | | 7.6 | 144 | 224 | 29 | 86 | 80 | 2 | 28 |
| annamal | i12007347 | 61 | 0 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | | 1 | | 32 | 127 | 89 | 136 | | 6.8 | 145 | 158 | 35 | 190 | 40 | 2 | 66 |
| bagyam | i12018138 | 65 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | | 1 | | 66 | 265 | 187 | 207 | | 12.17 | 163 | 85 | 31 | 115 | 70 | 2 | 44 |
| ebinezar | i12001408 | 55 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | 1 | 1 | | 12 | 158 | 111 | 175 | | 7.08 | 122 | 105 | 21 | 77 | 60 | 1 | 4 |
| geetha | i11023860 | 41 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | | 1 | | 62 | 195 | 126 | 174 | | 12.5 | 242 | 141 | 32 | 176 | 58 | 1 | 14 |
| gowri | i11026940 | 61 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | | 1 | 1 | 1 | 175 | 121 | 165 | | 9.5 | 156 | 105 | 35 | 98 | 56 | 2 | 38 |
| gowri | i12010496 | 65 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | | 1 | | 4 | 190 | 114 | 184 | | 6.8 | 210 | 110 | 40 | 156 | 69 | 2 | 25 |
| indirani | i12007297 | 61 | 0 | 1 | | | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | | 1 | | 6 | 182 | 111 | 185 | | 7.2 | 180 | 101 | 43 | 129 | 66 | 3 | 36 |
| jannama | i12029042 | 46 | 0 | 1 | 1 | 1 | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | | 1 | | 63 | 158 | 168 | 169 | | 6.59 | 235 | 81 | 56 | 167 | 40 | 1 | 30 |
| jeenath begam | i12021827 | 56 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 | | 66 | 208 | 102 | 144 | | 6.2 | 188 | 147 | 35 | 148 | 57 | 3 | 36 |
| jothimani | i12010572 | 51 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 120 | 258 | 101 | 243 | | 10.2 | 164 | 157 | 38 | 101 | 61 | 1 | 90 |
| kadeeja beebe | i12016249 | 54 | 0 | 1 | | | | | | | 0 | 0 | 0 | 1 | | | 0 | 1 | 1 | 2 | | 1 | | 63 | 174 | 123 | 220 | | 6.57 | 200 | 182 | 43 | 144 | 70 | 3 | 32 |
| kanaka | i11021550 | 70 | 0 | 1 | 1 | 1 | | | | | 0 | 0 | 1 | 0 | | | 0 | 1 | 1 | 3 | | 1 | | 42 | 165 | 153 | 166 | | 7.86 | 147 | 116 | 28 | 107 | 52 | 1 | 32 |
| kanmalam | i12027136 | 68 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 1 | | 41 | 148 | 92 | 133 | | 7.9 | 216 | 199 | 36 | 158 | 60 | 3 | 14 |
| mary loudi | i11027692 | 58 | 0 | 1 | | | | | | 1 | 1 | p | 0 | 1 | | | 0 | 0 | 1 | 5 | | 1 | | 40 | 130 | 144 | 158 | | 6.33 | 192 | 183 | 38 | 118 | 60 | 1 | 38 |
| natchaammal | i12017952 | 58 | 0 | 1 | 1 | | 1 | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 4 | | 1 | | 124 | 188 | 88 | 122 | | 11.86 | 232 | 116 | 48 | 163 | 38 | 3 | 75 |
| palaniammal | i11032642 | 67 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | 1 | | 36 | 302 | 204 | 252 | | 10.7 | 203 | 147 | 67 | 115 | 80 | 1 | 24 |
| palaniammal | i11034868 | 61 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | | 1 | | 75 | 306 | 199 | 185 | | 9.37 | 155 | 174 | 22 | 101 | 60 | 1 | 88 |
| radha chandran | i12001946 | 53 | 0 | 1 | 1 | | | | 1 | | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5 | | 1 | | 60 | 412 | 196 | 265 | | 11.9 | 157 | 58 | 43 | 102 | 60 | 1 | 4 |
| ramathal | i12013886 | 66 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 113 | 114 | 165 | | 6.39 | 240 | 167 | 43 | 184 | 50 | 1 | 28 |
| rathinam | i12030491 | 60 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | | 1 | 0 | 0 | 0 | 1 | 7 | | 1 | | 68 | 341 | 142 | 165 | | 7.1 | 148 | 83 | 37 | 94 | 66 | 1 | 35 |
| ruckmani | i12002013 | 58 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 6 | | 1 | | 45 | 117 | 100 | 120 | | 8 | 145 | 90 | 40 | 155 | 70 | 1 | 22 |
| sarasu | i12018912 | 61 | 0 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | 1 | | 68 | 264 | 136 | 165 | | 7.86 | 250 | 134 | 41 | 201 | 77 | 2 | 42 |
| saroja | i11034476 | 46 | 0 | 1 | | | | | | | 0 | 0 | 1 | 0 | | 0 | 0 | 1 | 1 | 4 | | 1 | | 38 | 414 | 236 | 265 | | 13.1 | 121 | 176 | 21 | 67 | 80 | 2 | 32 |
| sarojini | i11022708 | 61 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 1 | 3 | | 1 | | 64 | 291 | 125 | 165 | | 10.6 | 148 | 191 | 27 | 92 | 69 | 1 | 34 |
| seetha | i12030657 | 37 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | 1 | | 68 | 206 | 175 | 185 | | 6.9 | 134 | 166 | 35 | 78 | 44 | 3 | 68 |
| selvi | i12016052 | 46 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 36 | 117 | 99 | 122 | | 6.57 | 158 | 68 | 48 | 99 | 48 | 2 | 48 |
| senbaveni | i12002907 | 56 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | | 34 | 401 | 320 | 202 | | 14.5 | 298 | 197 | 43 | 221 | 65 | 3 | 22 |
| subaitha | i12007181 | 51 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 10 | | 1 | 0 | 124 | 152 | 128 | 184 | | 7.02 | 184 | 82 | 42 | 135 | 65 | 3 | 120 |
| subbathal | i11035580 | 66 | 0 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 1 | 10 | | 1 | | 132 | 300 | 148 | 199 | | 12.2 | 237 | 181 | 37 | 167 | 63 | 3 | 74 |
| suseela | i11024395 | 59 | 0 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 1 | 0 | 0 | 0 | 1 | 4 | | 1 | | 75 | 112 | 96 | 152 | | 8.2 | 101 | 79 | 20 | 68 | 50 | 1 | 68 |
| usha | i12002546 | 54 | 0 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | 1 | 6 | | 1 | | 28 | 192 | 89 | 165 | | 6.7 | 175 | 85 | 28 | 174 | 40 | 2 | 22 |
| valliammal | i12022737 | 63 | 0 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 128 | 309 | 297 | 165 | | 11.5 | 244 | 115 | 46 | 189 | 53 | 1 | 80 |
| vasantha mani | i11024051 | 52 | 0 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 100 | 233 | 154 | 255 | | 11.3 | 131 | 67 | 37 | 79 | 56 | 1 | 88 |
| vasanthamani | i12002492 | 66 | 0 | 1 | 1 | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 5 | | 1 | | 120 | 322 | 225 | 275 | | 10.21 | 123 | 120 | 24 | 76 | 56 | 3 | 60 |
| vijayalakshmi | i12004483 | 61 | 0 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 1 | | 1 | | 145 | 192 | 166 | 225 | | 7 | 178 | 102 | 40 | 110 | 45 | 3 | 106 |
| abdul | i12003616 | 61 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | | 14 | 225 | 155 | 188 | | 9 | 142 | 103 | 31 | 84 | 57 | 1 | 16 |
| amalarajan | i12027081 | 42 | 1 | 1 | | | | | | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 124 | 197 | 122 | 158 | | 6.5 | 285 | 159 | 37 | 148 | 52 | 1 | 80 |
| anbalagan | i12011591 | 52 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | | 1 | 1 | 1 | 175 | 102 | 185 | | 7 | 243 | 296 | 47 | 196 | 69 | 2 | 28 |
| anbuselvan | i12029050 | 47 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | | 1 | 1 | 1 | 169 | 213 | 285 | | 8.8 | 254 | 131 | 22 | 208 | 52 | 1 | 28 |
| angamuthu | i12017662 | 64 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | | 1 | | 34 | 166 | 94 | 165 | | 6.9 | 203 | 152 | 42 | 185 | 40 | 2 | 48 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| anthony | i12016411 | 41 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | | 1 | | 88 | 124 | 90 | 155 | | 6.92 | 152 | 153 | 25 | 143 | 57 | 1 | 80 |
| aravind shanmugam | i12009403 | 48 | 1 | 1 | | 1 | | | | | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | | 36 | 398 | 372 | 399 | | 9.5 | 251 | 297 | 42 | 163 | 59 | 1 | 12 |
| arjunan | i12025606 | 41 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 126 | 90 | 125 | | 7 | 230 | 186 | 59 | 142 | 62 | 2 | 80 |
| arumugam | i11021280 | 43 | 1 | 1 | | 1 | | | 1 | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | | 1 | | 62 | 235 | 158 | 175 | | 8.85 | 156 | 142 | 27 | 128 | 53 | 3 | 55 |
| arumugam | i11023098 | 60 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | | 1 | | 64 | 358 | 193 | 266 | | 9.5 | 150 | 175 | 23 | 104 | 65 | 1 | 15 |
| arumugam | i11025132 | 59 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 224 | 109 | 188 | | 6.4 | 190 | 180 | 34 | 94 | 56 | 3 | 122 |
| arumugam | i11032892 | 64 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | | 1 | 1 | | 28 | 113 | 99 | 132 | | 6.53 | 114 | 115 | 22 | 76 | 81 | 3 | 16 |
| ayyavu | i11030361 | 49 | 1 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | | 1 | | 24 | 213 | 144 | 177 | | 10.21 | 179 | 288 | 30 | 111 | 49 | 1 | 22 |
| aziz mulik | i11025803 | 65 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 188 | 90 | 155 | | 6.42 | 193 | 153 | 27 | 140 | 80 | 2 | 32 |
| babuji | i12021586 | 46 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | | 62 | 224 | 128 | 164 | | 8.95 | 168 | 222 | 43 | 156 | 59 | 2 | 36 |
| balasubramaniam | i11028349 | 65 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | | 1 | | 72 | 297 | 135 | 169 | | 12.08 | 155 | 86 | 37 | 92 | 58 | 3 | 48 |
| balasubramaniam | i12022051 | 60 | 1 | 1 | | | | | | | 1 | 1 | 0 | | 1 | 0 | 0 | 0 | 0 | | | 1 | | 20 | 178 | 99 | 154 | | 8.2 | 208 | 167 | 61 | 126 | 68 | 1 | 24 |
| boopathi | i12025313 | 47 | 1 | 1 | | 1 | | | | | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | | 100 | 201 | 201 | 268 | | 9.1 | 222 | 476 | 36 | 126 | 60 | 3 | 75 |
| chinnappan | i12031013 | 71 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 0 | | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 1 | 1 | 336 | 265 | 304 | | 6.9 | 183 | 83 | 54 | 112 | 58 | 1 | 32 |
| chinnaraj | i11035062 | 48 | 1 | 1 | | | | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 | | 62 | 120 | 120 | 186 | | 7.4 | 126 | 149 | 27 | 76 | 50 | 1 | 42 |
| chinnasamy | i11034277 | 56 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 225 | 109 | 169 | | 6.6 | 176 | 85 | 40 | 111 | 69 | 3 | 58 |
| chinnasamy | i12015739 | 71 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | 1 | 1 | | 13 | 114 | 95 | 145 | | 7 | 110 | 125 | 29 | 65 | 56 | 1 | 24 |
| deivasigamani | i12016221 | 62 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 143 | 87 | 136 | | 6.8 | 206 | 144 | 39 | 154 | 79 | 1 | 8 |
| deventhiran | i12026953 | 50 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 | | 38 | 236 | 156 | 186 | | 9.26 | 146 | 139 | 25 | 100 | 45 | 1 | 30 |
| dharmalingam | i12001428 | 78 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 1 | 1 | 0 | 62 | 234 | 244 | 275 | | 8.11 | 107 | 78 | 37 | 57 | 62 | 1 | 14 |
| dhayanan | i12011391 | 36 | 1 | | | | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 | | 35 | 72 | 111 | 146 | | 7.2 | 126 | 145 | 35 | 165 | 66 | 1 | 25 |
| dominic | i12018582 | 48 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | | 1 | | 60 | 258 | 102 | 169 | | 6.9 | 120 | 85 | 45 | 103 | 55 | 2 | 18 |
| duraisamy | i12027178 | 60 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | | 1 | 1 | 1 | 151 | 133 | 168 | | 6.2 | 161 | 190 | 28 | 113 | 48 | 1 | 18 |
| elango | i12013331 | 45 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | | 100 | 188 | 188 | 254 | | 10.1 | 188 | 235 | 113 | 187 | 55 | 3 | 90 |
| eswaran | i11034646 | 37 | 1 | 1 | | 1 | | | | | 1 | p | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 313 | 111 | 176 | | 11.4 | 171 | 143 | 32 | 109 | 44 | 1 | 75 |
| ganesan | i12027570 | 61 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | | 1 | | 62 | 194 | 136 | 255 | | 6.75 | 190 | 107 | 31 | 146 | 50 | 1 | 50 |
| gopalakrishnan | i12022243 | 73 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | | 1 | 0 | 110 | 133 | 114 | 165 | | 8 | 218 | 54 | 64 | 157 | 30 | 3 | 75 |
| gopalakrishnan | i12027628 | 55 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 | | 18 | 188 | 84 | 154 | | 8.9 | 146 | 121 | 31 | 93 | 45 | 1 | 30 |
| govindaraj | i12011882 | 65 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | | 28 | 91 | 90 | 132 | | 6.6 | 175 | 145 | 38 | 125 | 45 | 1 | 36 |
| gunasekaran | i11034203 | 39 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 | | 110 | 249 | 135 | 246 | | 7.87 | 264 | 209 | 37 | 190 | 65 | 3 | 112 |
| jagajothi | i12000417 | 66 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | | 1 | | 65 | 248 | 156 | 232 | | 8.96 | 200 | 200 | 33 | 130 | 75 | 3 | 30 |
| jayaraj | i12002664 | 52 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | | 60 | 338 | 161 | 224 | | 9.2 | 230 | 179 | 32 | 169 | 45 | 1 | 18 |
| jayaraj | i12012434 | 62 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 106 | 139 | 220 | | 7 | 180 | 144 | 36 | 129 | 48 | 3 | 68 |
| john | i12002729 | 63 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 189 | 129 | 180 | | 7.08 | 213 | 86 | 39 | 158 | 58 | 3 | 44 |
| kadhirullah | i11023460 | 62 | 1 | 1 | | | | | 1 | 1 | 0 | 0 | 0 | 1 | | | 0 | 1 | 1 | 10 | | 1 | | 62 | 332 | 236 | 299 | | 10.5 | 344 | 367 | 28 | 249 | 57 | 3 | 50 |
| kalavendhan | i12013713 | 46 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 5 | | 1 | | 120 | 108 | 188 | 222 | | 8.29 | 281 | 243 | 35 | 204 | 45 | 2 | 18 |
| kaliappan | i12031942 | 65 | 1 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | | 1 | 1 | | 136 | 198 | 171 | 190 | | 7.25 | 120 | 127 | 25 | 78 | 28 | 3 | 102 |
| kalisamy | i12016939 | 59 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | 1 | 1 | 1 | 175 | 114 | 166 | | 9.9 | 189 | 126 | 37 | 136 | 50 | 1 | 30 |
| kamnnaiyan | i12003556 | 68 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 2 | | 1 | | 26 | 158 | 112 | 136 | | 7 | 152 | 142 | 25 | 85 | 60 | 1 | 6 |
| kandasamy | i12001193 | 49 | 1 | | 1 | 1 | | | | | 0 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 24 | 248 | 202 | 266 | | 6.7 | 138 | 80 | 24 | 125 | 63 | 3 | 28 |
| kannan | i12018589 | 42 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 2 | | 1 | 0 | 92 | 106 | 98 | 155 | | 7.6 | 141 | 124 | 42 | 105 | 50 | 2 | 85 |
| karuppusamy | i12010492 | 61 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 2 | 1 | 1 | | 25 | 91 | 107 | 123 | | 6.9 | 163 | 125 | 21 | 125 | 68 | 3 | 28 |
| karupusamy | i12005782 | 44 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 5 | 1 | 1 | 1 | 1 | 110 | 103 | 133 | | 6.6 | 174 | 434 | 25 | 95 | 77 | 1 | 4 |
| kathirvel | i12029919 | 60 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 60 | 168 | 111 | 147 | | 6.68 | 148 | 84 | 28 | 102 | 50 | 1 | 28 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| krishnamooorhy | i12015757 | 61 | 1 | 1 | 1 | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 5 | | 1 | | 109 | 332 | 290 | 336 | | 10.1 | 173 | 146 | 42 | 119 | 41 | 1 | 80 |
| krishnamoorthy | i11025817 | 62 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | 1 | | 120 | 104 | 123 | 169 | | 6.63 | 102 | 101 | 22 | 63 | 60 | 3 | 152 |
| krishnan | i12002554 | 44 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | 1 | 1 | 1 | 1 | 122 | 101 | 144 | | 7.11 | 142 | 114 | 33 | 83 | 64 | 1 | 34 |
| krishnasamy | i12003524 | 60 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | | 1 | | 118 | 235 | 216 | 190 | | 9.39 | 197 | 137 | 25 | 136 | 35 | 3 | 106 |
| kumar | i12008825 | 53 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 68 | 299 | 255 | 366 | | 7.2 | 199 | 204 | 38 | 130 | 46 | 2 | 60 |
| kunikam | i12021173 | 56 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 5 | | 1 | | 34 | 170 | 105 | 155 | | 7.6 | 165 | 148 | 36 | 148 | 65 | 1 | 15 |
| laksmanan | i11029760 | 59 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 3 | | 1 | | 122 | 171 | 128 | 165 | | 6.42 | 199 | 181 | 31 | 124 | 22 | 3 | 68 |
| mahalingam | i11028142 | 56 | 1 | 1 | | | | | 1 | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | 1 | 1 | | 66 | 103 | 116 | 136 | | 6.88 | 123 | 118 | 23 | 74 | 62 | 3 | 38 |
| mahendran | i12014526 | 55 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 3 | | 1 | 1 | 1 | 260 | 222 | 268 | | 7.25 | 124 | 195 | 25 | 70 | 65 | 1 | 18 |
| mandharchalam | i12023522 | 83 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 6 | 1 | 1 | | 30 | 199 | 177 | 188 | | 6.32 | 126 | 53 | 36 | 83 | 62 | 3 | 30 |
| mani | i12023907 | 65 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | 1 | 1 | 1 | 136 | 126 | 166 | | 8.23 | 152 | 262 | 38 | 81 | 56 | 1 | 32 |
| manikandan | i12004615 | 46 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | | 1 | | 28 | 212 | 193 | 327 | | 9.3 | 190 | 125 | 35 | 133 | 52 | 2 | 34 |
| manoharan | i12028027 | 56 | 1 | 1 | | 1 | | | | 1 | 1 | 1 | 0 | 1 | | | 0 | 0 | 1 | 5 | | 1 | | 34 | 159 | 144 | 165 | | 8 | 185 | 142 | 40 | 123 | 50 | 3 | 38 |
| manokaran | i11029958 | 45 | 1 | 1 | | 1 | | | | | 1 | p | 1 | 0 | | | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 201 | 188 | 236 | | 7.2 | 259 | 175 | 32 | 178 | 60 | 1 | 26 |
| michael raj | i12018578 | 45 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | 1 | 1 | 1 | 209 | 188 | 196 | | 6.6 | 175 | 186 | 42 | 168 | 56 | 2 | 14 |
| mohamad ali | i12007101 | 66 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | 1 | | 68 | 131 | 129 | 114 | | 7.04 | 133 | 89 | 29 | 93 | 60 | 3 | 36 |
| mohammed | i12024213 | 59 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 8 | | 1 | | 124 | 103 | 111 | 135 | | 7.3 | 236 | 244 | 48 | 189 | 73 | 3 | 110 |
| mohammed ali | i12006918 | 51 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 14 | 90 | 86 | 124 | | 7.6 | 174 | 111 | 28 | 119 | 65 | 2 | 27 |
| murugaiyan | i12009440 | 72 | 1 | 1 | 1 | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 2 | | 1 | | 122 | 472 | 356 | 224 | | 12 | 205 | 139 | 42 | 144 | 30 | 3 | 66 |
| murugesan | i12014293 | 60 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 321 | 222 | 185 | | 9.54 | 196 | 142 | 39 | 142 | 57 | 3 | 75 |
| murugesan | i12024842 | 47 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 3 | | 1 | | 28 | 222 | 118 | 148 | | 6.7 | 140 | 184 | 31 | 86 | 57 | 1 | 30 |
| murugesh | i11030815 | 53 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | | 1 | 1 | 1 | 235 | 201 | 285 | | 7.8 | 185 | 136 | 57 | 105 | 55 | 2 | 55 |
| muthusamy | i11035932 | 76 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 5 | | 1 | | 130 | 238 | 255 | 322 | | 7.48 | 267 | 149 | 30 | 192 | 64 | 3 | 152 |
| muthusamy | i12003150 | 76 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 160 | 106 | 148 | | 7.2 | 127 | 119 | 20 | 82 | 52 | 2 | 38 |
| muthusamy | i12011096 | 64 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 5 | | 1 | | 34 | 199 | 129 | 185 | | 6.9 | 169 | 161 | 35 | 112 | 66 | 1 | 30 |
| muthusamy | i12024239 | 48 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 1 | 1 | 1 | | 120 | 269 | 221 | 265 | | 10.9 | 199 | 305 | 45 | 116 | 65 | 3 | 65 |
| muthusamy gounder | i12012119 | 75 | 1 | | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 1 | | 38 | 134 | 146 | 145 | | 7.9 | 146 | 139 | 29 | 101 | 56 | 1 | 32 |
| nadu gounder | i12012440 | 75 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 20 | 231 | 336 | 325 | | 8.3 | 139 | 39 | 44 | 92 | 46 | 1 | 32 |
| nagaraj | i12000841 | 44 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 1 | | | 0 | 0 | 0 | | | 1 | | 12 | 107 | 112 | 148 | | 6.8 | 114 | 71 | 27 | 74 | 62 | 1 | 4 |
| nagaraj | i120321706 | 48 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | 1 | | 36 | 200 | 185 | 256 | | 6.7 | 145 | 142 | 35 | 132 | 63 | 1 | 22 |
| nagoor | i12007052 | 49 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | 1 | | 112 | 103 | 122 | 200 | | 7.09 | 177 | 150 | 34 | 129 | 50 | 3 | 90 |
| narayanan | i12024807 | 51 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | 1 | 1 | | 50 | 352 | 222 | 248 | | 11.7 | 185 | 175 | 45 | 125 | 69 | 1 | 44 |
| nataraj | i11020838 | 69 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 132 | 225 | 298 | | 7.78 | 179 | 208 | 40 | 118 | 54 | 1 | 2 |
| nataraj | i11024796 | 51 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 2 | 1 | 1 | | 120 | 115 | 114 | 158 | | 7.89 | 187 | 205 | 32 | 122 | 60 | 1 | 10 |
| padmarajan | i11029438 | 59 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | 0 | 1 | | | 0 | 0 | 1 | 8 | | 1 | | 136 | 149 | 149 | 245 | | 6.78 | 161 | 130 | 24 | 101 | 60 | 3 | 124 |
| padmavathi | i12028216 | 75 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 1 | 10 | | 1 | | 66 | 151 | 144 | 200 | | 6.45 | 224 | 325 | 36 | 186 | 57 | 2 | 66 |
| palaanisamy | i12029738 | 53 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 5 | | 1 | | 90 | 206 | 136 | 165 | | 6.9 | 175 | 142 | 54 | 142 | 68 | 1 | 88 |
| palaniappan | i12005868 | 62 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 10 | 1 | 1 | | 120 | 287 | 155 | 165 | | 7.89 | 88 | 60 | 46 | 32 | 55 | 3 | 42 |
| palanisamy | 12004907 | 74 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 15 | 1 | 1 | | 130 | 190 | 164 | 154 | | 6.94 | 134 | 91 | 31 | 84 | 53 | 3 | 98 |
| palanisamy | i12023033 | 45 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 8 | | 1 | | 120 | 229 | 158 | 145 | | 7.6 | 199 | 114 | 35 | 145 | 56 | 3 | 68 |
| palanisamy | i12024862 | 65 | 1 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | 1 | | 120 | 340 | 83 | 152 | | 6.9 | 238 | 275 | 40 | 163 | 63 | 3 | 60 |
| palanisamy | i12030915 | 60 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 10 | | 1 | | 130 | 108 | 115 | 102 | | 6.9 | 127 | 110 | 24 | 80 | 28 | 2 | 65 |
| paramasivam | i11020598 | 74 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 5 | 1 | 1 | 1 | 1 | 212 | 99 | 152 | | 7.76 | 143 | 274 | 30 | 80 | 70 | 1 | 20 |
| perumalsamy | i12027701 | 67 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | | 1 | | 132 | 102 | 76 | 99 | | 7.1 | 180 | 142 | 32 | 130 | 68 | 3 | 90 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ponnusamy | i11025931 | 45 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | 1 | 1 | | 50 | 122 | 111 | 148 | | 6.98 | 163 | 121 | 24 | 116 | 62 | 1 | 32 |
| poovai | i12028198 | 58 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 2 | | 1 | | 120 | 147 | 142 | 175 | | 7.5 | 196 | 136 | 32 | 147 | 60 | 1 | 35 |
| prabhakaran | i12014048 | 41 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | 1 | | 70 | 210 | 169 | 185 | | 7.75 | 182 | 147 | 37 | 133 | 52 | 1 | 20 |
| prabhakaran | i12021525 | 52 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | | 1 | 1 | 1 | 189 | 105 | 208 | | 7.35 | 118 | 81 | 28 | 79 | 71 | 3 | 48 |
| prabhu | i12009258 | 43 | 1 | 1 | | 1 | | | | 1 | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | | 1 | | 24 | 254 | 156 | 258 | | 9.96 | 175 | 150 | 30 | 122 | 60 | 1 | 28 |
| radhakrishnan | i11022314 | 61 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | 1 | 1 | | 20 | 245 | 202 | 285 | | 7.35 | 87 | 76 | 15 | 57 | 62 | 1 | 32 |
| ragavan | i12021356 | 45 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 412 | 197 | 206 | | 12.7 | 227 | 256 | 43 | 155 | 58 | 1 | 16 |
| raghu kumar | i12013719 | 53 | 1 | 1 | | | | | 1 | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | 1 | | 50 | 333 | 272 | 247 | | 12.7 | 202 | 704 | 37 | 100 | 59 | 2 | 28 |
| raj kumar | i12020743 | 54 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 1 | | 1 | | 50 | 208 | 156 | 185 | | 12.4 | 188 | 163 | 30 | 140 | 53 | 1 | 30 |
| rajagopalan | i12015053 | 71 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 1 | 1 | 1 | 1 | | 62 | 96 | 99 | 108 | | 6.71 | 164 | 98 | 42 | 107 | 53 | 2 | 42 |
| rajamani | i11023197 | 59 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 265 | 228 | 285 | | 13.3 | 322 | 125 | 32 | 182 | 60 | 2 | 15 |
| rajendran | i12011507 | 55 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 3 | | 1 | | 120 | 188 | 129 | 165 | | 6.7 | 204 | 93 | 47 | 153 | 45 | 1 | 80 |
| rajendran | i12027383 | 54 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | 1 | | 128 | 83 | 88 | 155 | | 6.7 | 126 | 83 | 27 | 82 | 56 | 2 | 105 |
| raju | i12029503 | 45 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 40 | 199 | 102 | 125 | | 6.67 | 196 | 335 | 28 | 112 | 55 | 1 | 10 |
| ramaamoorthy | i12020819 | 71 | 1 | 1 | | 1 | | | | 1 | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 276 | 160 | 202 | | 6.54 | 186 | 492 | 34 | 73 | 54 | 1 | 20 |
| ramachandran | i12032092 | 79 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 1 | 5 | | 1 | | 122 | 182 | 122 | 165 | | 7.6 | 166 | 177 | 32 | 162 | 46 | 3 | 66 |
| ramakrishnan | i11021005 | 66 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 336 | 165 | 225 | | 7.8 | 144 | 139 | 29 | 94 | 48 | 1 | 26 |
| ramakrishnan | i12021291 | 56 | 1 | 1 | | | | | | | 0 | 0 | 1 | 0 | | 0 | 0 | 1 | 0 | | | 1 | | 62 | 205 | 137 | 189 | | 6.59 | 173 | 156 | 45 | 102 | 40 | 2 | 36 |
| ramar | i11031192 | 46 | 1 | 1 | | 1 | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 108 | 99 | 108 | | 9.9 | 165 | 184 | 32 | 112 | 63 | 1 | 12 |
| ramasamy | i12006902 | 49 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | | 12 | 201 | 155 | 168 | | 7.2 | 109 | 98 | 34 | 98 | 60 | 1 | 18 |
| ramasamy | i12015074 | 53 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | 1 | 1 | | 128 | 215 | 144 | 156 | | 9.02 | 158 | 68 | 35 | 122 | 60 | 1 | 88 |
| ranganathan | i12004748 | 57 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 8 | | 1 | | 112 | 104 | 99 | 111 | | 6 | 191 | 61 | 63 | 119 | 55 | 1 | 80 |
| rangaraj | i12014944 | 54 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | 1 | | 120 | 117 | 124 | 142 | | 6.8 | 160 | 88 | 31 | 121 | 69 | 1 | 90 |
| ravi | i12000776 | 51 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 130 | 117 | 139 | 169 | | 6.6 | 198 | 175 | 28 | 107 | 47 | 3 | 76 |
| robert | i11021108 | 33 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 181 | 175 | 148 | | 6.4 | 230 | 55 | 49 | 178 | 66 | 1 | 38 |
| samiyappan | i12029460 | 47 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 5 | | 1 | 1 | 1 | 169 | 133 | 145 | | 8.81 | 256 | 154 | 46 | 194 | 69 | 1 | 26 |
| sampathkumar | i11034668 | 52 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 5 | | 1 | 1 | 1 | 237 | 156 | 185 | | 8.46 | 198 | 146 | 28 | 144 | 70 | 2 | 42 |
| saravanan | i12015358 | 37 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 90 | 99 | 122 | | 7.5 | 152 | 178 | 35 | 102 | 79 | 1 | 20 |
| seetharaman | i12027779 | 58 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | 1 | | 44 | 113 | 114 | 136 | | 8.2 | 245 | 158 | 29 | 164 | 70 | 2 | 44 |
| sekar | i12001166 | 41 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 257 | 162 | 200 | | 9.11 | 251 | 546 | 28 | 144 | 70 | 3 | 52 |
| selva rajan | i12030681 | 64 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | 1 | 1 | | 100 | 205 | 165 | 185 | | 6.6 | 205 | 41 | 33 | 122 | 60 | 2 | 80 |
| selvaraj | i11024264 | 43 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 8 | | 1 | | 40 | 114 | 110 | 145 | | 7.7 | 167 | 122 | 22 | 124 | 80 | 2 | 34 |
| selvaraj | i11034171 | 61 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | 1 | | 22 | 77 | 88 | 135 | | 6.9 | 198 | 181 | 32 | 134 | 66 | 2 | 16 |
| selvaraj | i11033528 | 66 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | 1 | 1 | 1 | 135 | 110 | 165 | | 7 | 174 | 108 | 30 | 122 | 66 | 1 | 22 |
| selvaraj | i11036200 | 53 | 1 | 1 | | | | | | | 0 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | 1 | | 130 | 119 | 137 | 140 | | 8.2 | 175 | 152 | 37 | 110 | 69 | 3 | 88 |
| selvaraj | i12006512 | 47 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 230 | 148 | 185 | | 7.1 | 206 | 156 | 40 | 196 | 50 | 3 | 38 |
| selvaraj | i12017742 | 46 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 1 | 4 | 1 | 1 | | 108 | 245 | 216 | 201 | | 9.87 | 215 | 184 | 30 | 161 | 40 | 1 | 90 |
| selvaraj | i12029693 | 52 | 1 | 1 | | 1 | | | | | 1 | p | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 127 | 399 | 344 | 320 | | 9.7 | 179 | 82 | 41 | 117 | 45 | 1 | 102 |
| sengotayan | i12010856 | 59 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | 1 | | 80 | 108 | 98 | 100 | | 6.8 | 142 | 108 | 25 | 110 | 55 | 2 | 35 |
| seniappan | i12020485 | 55 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 0 | 120 | 388 | 231 | 268 | | 13.49 | 184 | 54 | 54 | 119 | 60 | 1 | 80 |
| shanmugam.m | i12000873 | 44 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 1 | | 0 | 0 | 0 | 1 | 2 | | 1 | | 122 | 122 | 102 | 145 | | 6.9 | 196 | 105 | 27 | 145 | 56 | 3 | 95 |
| shanmugasundaram | i12009419 | 55 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 2 | 1 | 1 | | 100 | 203 | 146 | 202 | | 6.2 | 175 | 120 | 35 | 169 | 50 | 2 | 85 |
| sivabalan | i12012491 | 59 | 1 | 1 | | | | | 1 | | 0 | 0 | 0 | 1 | | 0 | 0 | 1 | 1 | 5 | | 1 | 1 | 1 | 160 | 142 | 178 | | 6.45 | 227 | 67 | 47 | 172 | 49 | 3 | 38 |
| sivakumar | i12030079 | 55 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 2 | | 1 | | 36 | 174 | 94 | 132 | | 7.2 | 127 | 160 | 31 | 68 | 63 | 1 | 20 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sivanandham | i12028230 | 42 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | | 1 | | 100 | 138 | 95 | 132 | | 6.8 | 156 | 94 | 35 | 109 | 56 | 2 | 65 |
| sivaraj | i12023534 | 57 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | | 1 | 1 | 1 | 224 | 162 | 198 | | 9.6 | 117 | 69 | 45 | 99 | 36 | 1 | 12 |
| sivasubramaniam | i12024169 | 52 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 56 | 299 | 271 | 225 | | 8.27 | 203 | 242 | 49 | 134 | 73 | 1 | 35 |
| soma sundaram | i12024646 | 65 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 40 | 147 | 112 | 142 | | 6.6 | 180 | 37 | 60 | 127 | 52 | 1 | 35 |
| srinivasan | i12030932 | 70 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 102 | 102 | 136 | | 7.1 | 125 | 33 | 24 | 90 | 63 | 1 | 28 |
| stephen | i11024466 | 43 | 1 | 1 | | 1 | | | | 1 | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 1 | 5 | | 1 | 1 | 1 | 191 | 144 | 142 | | 7.3 | 213 | 124 | 28 | 161 | 60 | 1 | 16 |
| subramaniam | i11023415 | 66 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | 1 | | 128 | 322 | 149 | 175 | | 9.94 | 223 | 113 | 48 | 159 | 51 | 1 | 82 |
| subramaniam | i12001600 | 65 | 1 | 0 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | 1 | 1 | | 36 | 102 | 99 | 145 | | 8.2 | 264 | 175 | 35 | 196 | 60 | 3 | 102 |
| subramaniam | i12030398 | 73 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | | 38 | 101 | 98 | 142 | | 7.2 | 188 | 222 | 30 | 119 | 63 | 1 | 52 |
| subramaniam | i12030530 | 60 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 169 | 94 | 115 | | 6.6 | 161 | 95 | 24 | 118 | 45 | 1 | 25 |
| subramanian | i12004016 | 57 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 1 | 4 | 1 | 1 | | 68 | 188 | 118 | 169 | | 6.9 | 220 | 117 | 52 | 144 | 50 | 2 | 66 |
| subramanian.n | i12001584 | 48 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | 0 | | 1 | 1 | 1 | 244 | 120 | 202 | | 8.5 | 150 | 131 | 37 | 90 | 80 | 2 | 32 |
| subramanianm | i12012915 | 54 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | | 40 | 281 | 125 | 136 | | 13.1 | 165 | 86 | 35 | 103 | 78 | 1 | 28 |
| sukumaran | i11033676 | 52 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | 1 | | 44 | 366 | 196 | 189 | | 9.8 | 227 | 152 | 31 | 165 | 62 | 1 | 24 |
| sulaiman | i11030107 | 62 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 4 | 1 | 1 | | 45 | 230 | 114 | 200 | | 7.3 | 212 | 165 | 35 | 138 | 60 | 3 | 48 |
| suraj | i12021038 | 67 | 1 | 1 | | 1 | | | | 1 | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 208 | 227 | 226 | | 8.8 | 222 | 182 | 40 | 165 | 60 | 2 | 15 |
| swaminathan | i12005124 | 46 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | | 128 | 300 | 218 | 220 | | 10 | 159 | 299 | 17 | 95 | 36 | 3 | 102 |
| thamarai selvan | i12024957 | 30 | 1 | 1 | | 1 | | | 1 | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | 87 | 90 | 162 | | 8.6 | 160 | 185 | 50 | 114 | 73 | 1 | 33 |
| thangavelu | i12001566 | 51 | 1 | 1 | | | | | | | 0 | 0 | 0 | 1 | | 0 | 0 | 1 | 1 | 2 | 1 | 1 | | 100 | 163 | 122 | 169 | | 7.2 | 200 | 162 | 34 | 142 | 45 | 1 | 62 |
| thangavelu | i12000853 | 51 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 1 | | 0 | 0 | 1 | 1 | 8 | | 1 | | 102 | 160 | 142 | 148 | | 8.6 | 148 | 90 | 23 | 104 | 40 | 3 | 68 |
| vairam | i12001289 | 57 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 5 | | 1 | | 14 | 188 | 88 | 136 | | 6.8 | 140 | 175 | 38 | 136 | 61 | 1 | 18 |
| vaithyanathan | i12015483 | 76 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 2 | | 1 | 1 | 1 | 143 | 130 | 136 | | 6.38 | 99 | 68 | 37 | 56 | 55 | 3 | 66 |
| vauyapuri | i12009520 | 52 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 5 | 1 | 1 | | 8 | 146 | 103 | 222 | | 6.6 | 148 | 120 | 29 | 106 | 55 | 1 | 14 |
| veerasamy | i12031696 | 73 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 1 | 1 | 1 | | 120 | 216 | 188 | 266 | | 9.6 | 290 | 194 | 49 | 215 | 25 | 2 | 27 |
| velayutham | i12015529 | 55 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 2 | | 1 | | 20 | 94 | 105 | 163 | | 8.9 | 96 | 99 | 22 | 61 | 39 | 1 | 22 |
| vellingiri | i12019093 | 70 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | 0 | 130 | 122 | 129 | 188 | | 6.56 | 160 | 135 | 38 | 104 | 56 | 3 | 92 |
| velumani | i11031577 | 37 | 1 | 1 | | | | | | | 1 | 0 | 0 | 0 | | 1 | 0 | 0 | 1 | 2 | | 1 | | 36 | 288 | 199 | 265 | | 14.2 | 165 | 42 | 40 | 118 | 72 | 1 | 26 |
| velusamy | i12008041 | 63 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 285 | 205 | 265 | | 10.4 | 138 | 91 | 49 | 78 | 45 | 2 | 48 |
| velusamy | i12015904 | 51 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 3 | 1 | 1 | | 28 | 150 | 125 | 169 | | 8.5 | 135 | 53 | 39 | 95 | 60 | 3 | 38 |
| vengatesan | i12017817 | 70 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | 1 | | 70 | 251 | 211 | 155 | | 10.3 | 150 | 60 | 33 | 110 | 76 | 1 | 44 |
| venkatachalam | i11032378 | 68 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | 1 | | 130 | 322 | 200 | 265 | | 10.7 | 168 | 113 | 24 | 124 | 68 | 3 | 136 |
| venkatachalam | i12005105 | 53 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 1 | 1 | 1 | | 128 | 436 | 370 | 192 | | 9.31 | 227 | 286 | 38 | 141 | 45 | 2 | 95 |
| venkatasalam | i12021906 | 45 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 10 | | 1 | 1 | 1 | 224 | 200 | 266 | | 7 | 138 | 76 | 45 | 98 | 56 | 1 | 12 |
| vettal | i12011943 | 57 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | 1 | 1 | 1 | 121 | 99 | 105 | | 7.4 | 265 | 175 | 42 | 182 | 75 | 1 | 28 |
| vijay anand | i12006220 | 34 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 365 | 149 | 175 | | 10.4 | 203 | 168 | 30 | 140 | 60 | 1 | 35 |
| vijayaraghavan | i12018842 | 63 | 1 | | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | | 1 | | 80 | 237 | 131 | 265 | | 8.69 | 169 | 72 | 33 | 124 | 40 | 3 | 88 |
| viyayakumar | i12014441 | 32 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | 1 | 1 | 1 | 305 | 235 | 266 | | 8.96 | 146 | 94 | 28 | 112 | 56 | 2 | 44 |
| amsaveni | i12008248 | 55 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | | | 98 | 96 | 132 | | 5.5 | 145 | 70 | 41 | 102 | 65 | 1 | 42 |
| amutha | i11036004 | 56 | 0 | 1 | 1 | 1 | | | 1 | | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | | | | 98 | 88 | 142 | | 5.68 | 188 | 80 | 34 | 152 | 46 | 1 | 35 |
| bakkaiam | i12029279 | 57 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 218 | 107 | 142 | | 3.06 | 143 | 113 | 27 | 94 | 72 | 1 | 30 |
| kasthuri | i12006068 | 59 | 0 | 1 | | | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 1 | 5 | | | | | 253 | 219 | 188 | | 5.5 | 238 | 70 | 52 | 167 | 60 | 2 | 28 |
| kulandayal | i11021133 | 69 | 0 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 5 | | | | | 96 | 94 | 120 | | 5.56 | 156 | 77 | 38 | 102 | 50 | 1 | 25 |
| kumari | i12017131 | 51 | 0 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | | | | | 94 | 99 | 106 | | 5.3 | 175 | 101 | 46 | 145 | 36 | 2 | 38 |
| lalitha | i11031725 | 57 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 3 | | | | | 86 | 91 | 124 | | 5.3 | 209 | 74 | 46 | 148 | 69 | 1 | 20 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | EF | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mylathal | i12032121 | 50 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 4 | | | | | 100 | 95 | 129 | | 5.52 | 142 | 62 | 45 | 100 | 56 | 1 | 22 |
| pappa | i12008392 | 43 | 0 | 1 | 1 | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 145 | 108 | 128 | | 5.5 | 114 | 42 | 45 | 62 | 30 | 3 | 5 |
| pichiammal | i12018281 | 50 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 130 | 98 | 125 | | 5.6 | 206 | 111 | 49 | 113 | 50 | 1 | 6 |
| ranganayaki | i12029401 | 70 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 132 | 100 | 136 | | 5.58 | 214 | 73 | 61 | 105 | 50 | 1 | 20 |
| sargunam | i11033097 | 64 | 0 | 1 | | 1 | | | | | 1 | p | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | | | | | 140 | 107 | 148 | | 5.1 | 154 | 119 | 23 | 110 | 68 | 1 | 42 |
| saroja | i12020608 | 42 | 0 | 1 | 1 | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 2 | | | | | 177 | 141 | 145 | | 4.9 | 193 | 150 | 34 | 145 | 42 | 1 | 32 |
| savithri | i11028530 | 38 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | | | | | 94 | 98 | 175 | | 5.6 | 193 | 109 | 36 | 125 | 68 | 1 | 16 |
| sornam | i12002260 | 61 | 0 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 147 | 140 | 142 | | 5.3 | 219 | 108 | 41 | 141 | 49 | 1 | 18 |
| viyayalakshmi | i12014241 | 49 | 0 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 4 | | | | | 89 | 92 | 110 | | 5.6 | 202 | 352 | 27 | 142 | 55 | 1 | 12 |
| yaseen | i11027892 | 39 | 0 | 1 | | | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 99 | 99 | 142 | | 5.4 | 237 | 61 | 38 | 176 | 50 | 2 | 88 |
| ayyasamy | i12024332 | 63 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | | | | | 102 | 126 | 123 | | 5.2 | 194 | 118 | 36 | 154 | 48 | 3 | 75 |
| balakrishnan | i12003421 | 58 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 182 | 124 | 125 | | 5.45 | 220 | 316 | 32 | 144 | 61 | 1 | 102 |
| balaraman | i12000194 | 74 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 10 | 1 | | | | 125 | 106 | 136 | | 5.5 | 181 | 37 | 46 | 118 | 56 | 1 | 48 |
| balu | i12026630 | 55 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | | | | | 102 | 91 | 108 | | | 178 | 101 | 29 | 140 | 30 | 1 | 90 |
| cbinna karuppan | i12004549 | 47 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 140 | 144 | 142 | | 5.2 | 136 | 48 | 33 | 88 | 48 | 1 | 6 |
| chandrasekaran | i12033200 | 52 | 1 | 1 | | | | | | | 1 | 0 | 0 | | 1 | 0 | 0 | 0 | 1 | 4 | | | | | 103 | 96 | 125 | | 5.24 | 183 | 84 | 37 | 130 | 72 | 1 | 12 |
| chinnaraja | i11024110 | 53 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | 1 | | | | 129 | 92 | 135 | | 5.4 | 151 | 97 | 23 | 116 | 62 | 3 | 28 |
| dhandapani | i11034508 | 45 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 88 | 99 | 125 | | 5.5 | 158 | 84 | 32 | 106 | 42 | 1 | 16 |
| edward | i12016651 | 52 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 98 | 92 | 104 | | 5.48 | 225 | 78 | 47 | 173 | 55 | 1 | 16 |
| elaiyappan | i12024107 | 65 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 108 | 104 | 185 | | 5.6 | 159 | 144 | 25 | 126 | 51 | 2 | 80 |
| ellumalai | i11022874 | 41 | 1 | | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | | | | 119 | 96 | 165 | | 5.3 | 176 | 132 | 29 | 120 | 67 | 1 | 22 |
| gopal | i12017714 | 48 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | | | | 132 | 96 | 134 | | 5.1 | 152 | 125 | 42 | 95 | 52 | 2 | 22 |
| gopal | i12030042 | 60 | 1 | 1 | 1 | | | | | | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | | | 106 | 99 | 124 | | 5.15 | 165 | 152 | 25 | 142 | 42 | 2 | 45 |
| gopalasamy | i12011055 | 48 | 1 | | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | | | | | 131 | 111 | 126 | | 5.44 | 156 | 101 | 38 | 108 | 76 | 1 | 18 |
| gopi | i12028602 | 54 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 87 | 102 | 165 | | 5.2 | 190 | 96 | 28 | 141 | 45 | 2 | 58 |
| govindaraj | i11022568 | 64 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | | 191 | 117 | 145 | | 5.38 | 165 | 145 | 34 | 112 | 65 | 2 | 60 |
| govindaraj | i12018002 | 30 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | | | | 124 | 105 | 135 | | 5.5 | 140 | 220 | 14 | 81 | 36 | 1 | 12 |
| gurusamy | i12019136 | 60 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | | | | | 105 | 91 | 148 | | 5.66 | 183 | 122 | 43 | 132 | 75 | 1 | 20 |
| jagadeesan | i12003041 | 66 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | | 100 | 75 | 105 | | 5.6 | 147 | 58 | 44 | 93 | 53 | 1 | 8 |
| jayakumar | i12029770 | 42 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | | | 98 | 101 | 136 | | 5.45 | 153 | 128 | 41 | 87 | 53 | 1 | 4 |
| jayaram | i12008184 | 61 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 1 | | | | 136 | 121 | 128 | | 5.6 | 187 | 59 | 57 | 128 | 46 | 3 | 183 |
| joseph | i12014747 | 61 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | | | | 122 | 98 | 140 | | 5.66 | 175 | 80 | 46 | 122 | 55 | 1 | 32 |
| kanagaraj | i11027303 | 51 | 1 | 1 | | | | | | | 1 | 1 | 0 | | 1 | | 0 | 0 | 0 | | | | | | 99 | 89 | 136 | | 5.4 | 148 | 229 | 29 | 76 | 70 | 1 | 16 |
| kandasamy | i12022316 | 70 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 1 | | | 0 | 1 | 1 | 5 | | | | | 98 | 96 | 185 | | 5.2 | 176 | 168 | 35 | 165 | 50 | 1 | 36 |
| kandhasamy | i11024373 | 76 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | | | | 88 | 95 | 132 | | 5.5 | 148 | 57 | 37 | 97 | 40 | 3 | 28 |
| kandhasamy | i12024514 | 41 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 125 | 95 | 142 | | 5.5 | 153 | 238 | 32 | 93 | 54 | 1 | 12 |
| kaniaapan | i12011318 | 78 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 8 | | | | | 136 | 105 | 146 | | 5 | 118 | 49 | 51 | 55 | 42 | 1 | 88 |
| karuppusamy | i12023887 | 42 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 231 | 108 | 142 | | 5.38 | 197 | 151 | 40 | 140 | 58 | 1 | 12 |
| kolaindaisamy | i12014936 | 81 | 1 | 1 | 1 | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | | | | 90 | 95 | 142 | | 5.6 | 169 | 98 | 24 | 145 | 57 | 2 | 25 |
| krishnasamy | i12001823 | 70 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | | | | 113 | 101 | 136 | | 5.55 | 189 | 195 | 24 | 165 | 50 | 1 | 12 |
| krishnavelu | i11030421 | 63 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 10 | | | | | 141 | 102 | 124 | | 5.6 | 176 | 138 | 34 | 122 | 50 | 1 | 18 |
| kumarasamy | i11030241 | 50 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 1 | | | | | 114 | 98 | 108 | | 5.4 | 312 | 345 | 22 | 145 | 42 | 3 | 46 |
| kumarasamy | i12000263 | 46 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 | | 1 | | | | 132 | 95 | 104 | | 5.6 | 165 | 115 | 29 | 117 | 48 | 1 | 35 |
| leoraj | i11021565 | 63 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 89 | 81 | 136 | | 5 | 123 | 77 | 30 | 75 | 50 | 1 | 38 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| linganathan | i11024022 | 56 | 1 | 1 | | 1 | | | | | 1 | p | 0 | | 1 | | 0 | 0 | 0 | | | | | | 203 | 100 | 142 | | 5.3 | 169 | 45 | 35 | 122 | 45 | 1 | 66 |
| malleswaran | i12001209 | 23 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 83 | 90 | 105 | | 5.4 | 185 | 175 | 29 | 159 | 70 | 1 | 8 |
| mani | i12029238 | 55 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 12 | | | | | 120 | 108 | 136 | | 5.5 | 142 | 109 | 26 | 90 | 64 | 2 | 65 |
| mani | i120310164 | 68 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 81 | 71 | 105 | | 5.4 | 126 | 89 | 33 | 74 | 67 | 1 | 14 |
| manivannan | i12001286 | 33 | 1 | 1 | | | | | | | 0 | 0 | 0 | 1 | | | 0 | 0 | 0 | | 1 | | | | 90 | 95 | 108 | | 5.6 | 121 | 214 | 27 | 65 | 72 | 1 | 6 |
| manivelsamy | i110242320 | 61 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 116 | 92 | 112 | | 5.47 | 102 | 109 | 30 | 51 | 77 | 1 | 22 |
| manoharan | i12002041 | 55 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 145 | 92 | 142 | | 5.6 | 177 | 146 | 33 | 116 | 63 | 1 | 18 |
| manoharan | i12015281 | 54 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | 1 | | | | 114 | 93 | 135 | | 5.24 | 149 | 120 | 39 | 98 | 47 | 1 | 60 |
| marappan | i12013776 | 56 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 1 | 1 | | | | 103 | 92 | 128 | | 5.8 | 165 | 126 | 36 | 140 | 71 | 1 | 28 |
| marimuthu | i12009488 | 79 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 140 | 120 | 136 | | 5.64 | 168 | 57 | 51 | 115 | 60 | 1 | 18 |
| marimuthu | i12017998 | 34 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 99 | 92 | 172 | | 5.46 | 231 | 175 | 34 | 162 | 60 | 1 | 16 |
| marmuthu | i12027952 | 49 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | | | | 95 | 98 | 136 | | 5.1 | 146 | 105 | 42 | 125 | 50 | 2 | 20 |
| muralishankar | i11030377 | 50 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 104 | 95 | 132 | | 5.3 | 183 | 62 | 33 | 137 | 55 | 3 | 154 |
| murugesan | i12015155 | 31 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 1 | 1 | | | | 94 | 108 | 142 | | 5.5 | 172 | 102 | 45 | 102 | 68 | 1 | 2.5 |
| muthu | i12013565 | 54 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 126 | 98 | 136 | | 5.68 | 204 | 145 | 42 | 153 | 40 | 1 | 32 |
| muthukumarasamy | i11027188 | 49 | 1 | 1 | | | | | | | 0 | 0 | 1 | 0 | | | 0 | 1 | 1 | 2 | 1 | | | | 92 | 94 | 122 | | 5.29 | 143 | 101 | 24 | 94 | 66 | 1 | 15 |
| nanjappan | i12023689 | 68 | 1 | 1 | | 1 | | | | | 0 | 0 | 1 | 0 | | | 0 | 1 | 1 | 5 | | | | | 102 | 89 | 125 | | 5.6 | 168 | 88 | 42 | 142 | 72 | 1 | 28 |
| nanjukutty | i12021388 | 63 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 2 | | | | | 108 | 113 | 142 | | 5.45 | 190 | 179 | 42 | 134 | 64 | 1 | 36 |
| nataraj | i11035124 | 67 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 1 | | | | | 107 | 95 | 136 | | 5.4 | 95 | 94 | 29 | 44 | 60 | 1 | 32 |
| natarajan | i12001571 | 48 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 77 | 86 | 122 | | 5.4 | 151 | 140 | 21 | 104 | 52 | 2 | 58 |
| natrajan | i12032699 | 72 | 1 | 1 | 1 | | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 99 | 88 | 99 | | 5.5 | 162 | 63 | 37 | 115 | 46 | 1 | 32 |
| palaniappan | i11032481 | 71 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | | | | | 89 | 110 | 104 | | 5.34 | 154 | 51 | 40 | 102 | 88 | 3 | 188 |
| palanimuthu | i12022595 | 48 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | 1 | | | | 105 | 94 | 142 | | 5.2 | 176 | 86 | 66 | 101 | 75 | 1 | 32 |
| palanisamy | i12013081 | 53 | 1 | 1 | | 1 | | | | 1 | 1 | 1 | 0 | 1 | | | 0 | 0 | 1 | 1 | | | | | 102 | 95 | 127 | | 5.3 | 164 | 98 | 30 | 150 | 40 | 1 | 20 |
| palanisamy | i12027045 | 50 | 1 | 1 | | | | | 1 | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 89 | 90 | 136 | | 5.6 | 176 | 145 | 28 | 16 | 60 | 1 | 88 |
| palanisamy.o | i12004866 | 46 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 97 | 93 | 98 | | 5.2 | 170 | 126 | 28 | 119 | 52 | 1 | 74 |
| periyasamy | i12008232 | 73 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 2 | | | | | 154 | 101 | 135 | | 5.5 | 175 | 158 | 26 | 175 | 33 | 3 | 165 |
| periyasamy | i12025563 | 48 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 120 | 97 | 132 | | 4.5 | 97 | 88 | 48 | 47 | 56 | 1 | 10 |
| ponnusamy | i12011198 | 37 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 126 | 123 | 152 | | 5.4 | 125 | 70 | 37 | 78 | 58 | 2 | 55 |
| ponnusamy | i12029218 | 55 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 120 | 95 | 136 | | 5.5 | 119 | 67 | 26 | 80 | 50 | 1 | 39 |
| prakash | i12005999 | 61 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 2 | | | | | 120 | 86 | 111 | | 5.5 | 156 | 102 | 29 | 132 | 55 | 1 | 4 |
| prakash | i12017001 | 39 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | | | | 120 | 102 | 136 | | 5.4 | 310 | 333 | 45 | 225 | 58 | 3 | 34 |
| pramod | i12027776 | 41 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 106 | 98 | 136 | | 5.1 | 169 | 193 | 33 | 103 | 60 | 1 | 8 |
| radhakrishnan | i11020932 | 54 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 90 | 95 | 102 | | 5.6 | 176 | 96 | 35 | 129 | 67 | 1 | 22 |
| rajan | i12021948 | 61 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | | | | 90 | 120 | 125 | | 5.5 | 175 | 81 | 38 | 121 | 50 | 3 | 46 |
| ramachandran | i12018640 | 62 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | | | | | 104 | 91 | 142 | | 5.5 | 170 | 81 | 40 | 115 | 62 | 1 | 48 |
| ramanathan | i12004527 | 50 | 1 | | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | | | | | 123 | 161 | 136 | | 5.6 | 168 | 95 | 41 | 107 | 55 | 1 | 42 |
| ranganathan | i11024511 | 79 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 200 | 102 | 150 | | 5.4 | 130 | 50 | 22 | 95 | 55 | 1 | 75 |
| rangasamy | i12004887 | 74 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 2 | | | | | 106 | 122 | 136 | | 5.3 | 138 | 119 | 42 | 80 | 38 | 3 | 75 |
| rangasamy | i12013100 | 49 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 3 | | | | | 107 | 91 | 142 | | 5.5 | 226 | 94 | 40 | 166 | 36 | 1 | 80 |
| sakthivel | i12000053 | 53 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 2 | | | | | 136 | 106 | 135 | | 5.46 | 144 | 227 | 25 | 81 | 62 | 1 | 52 |
| sakthivel | i12012191 | 45 | 1 | 1 | | | | | 1 | 1 | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 105 | 95 | 136 | | 5.6 | 185 | 152 | 39 | 185 | 52 | 1 | 28 |
| sam chelladurai | i12002885 | 35 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 120 | 90 | 125 | | 4.9 | 170 | 200 | 26 | 152 | 45 | 1 | 12 |
| sastha | i11032818 | 32 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 4 | | | | | 140 | 121 | 165 | | 4.6 | 232 | 238 | 45 | 156 | 44 | 1 | 52 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sekar | i11026168 | 59 | 1 | 1 | | 1 | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 1 | 2 | 1 | | | | 89 | 95 | 140 | | 5.5 | 153 | 85 | 25 | 119 | 60 | 1 | 26 |
| selvaraj | i12031078 | 35 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | | | | 122 | 101 | 135 | | 5.3 | 242 | 145 | 36 | 168 | 65 | 1 | 18 |
| senthil kumar | i12007020 | 38 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 135 | 127 | 142 | | 5.53 | 298 | 175 | 30 | 245 | 55 | 1 | 30 |
| shanmugam | i12001375 | 79 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 5 | | | | | 128 | 138 | 136 | | 5.66 | 221 | 67 | 55 | 151 | 62 | 2 | 42 |
| shanmugam | i12017542 | 45 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 131 | 136 | 122 | | 5.8 | 235 | 70 | 54 | 174 | 50 | 1 | 26 |
| sivanandan | i12009861 | 58 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 124 | 95 | 135 | | 5.68 | 120 | 105 | 30 | 69 | 70 | 1 | 45 |
| sivaprakasam | i11033191 | 61 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 136 | 101 | 164 | | 5.6 | 231 | 174 | 45 | 162 | 45 | 1 | 26 |
| srinivasan | i12021878 | 67 | 1 | 1 | | 1 | | | 1 | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 106 | 95 | 135 | | 5.4 | 206 | 40 | 51 | 145 | 54 | 1 | 32 |
| subramaniam | i11021327 | 47 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 2 | | | | | 125 | 94 | 145 | | 5.2 | 199 | 152 | 35 | 136 | 40 | 1 | 22 |
| subramaniam | i12023697 | 48 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 4 | | | | | 124 | 90 | 135 | | 5.21 | 197 | 128 | 38 | 144 | 80 | 2 | 80 |
| subramanian | i11029838 | 66 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | | | | 183 | 1123 | 152 | | 5.3 | 206 | 303 | 28 | 112 | 49 | 2 | 36 |
| subramanianm | i12013873 | 66 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 104 | 89 | 135 | | 5.6 | 179 | 102 | 45 | 128 | 49 | 1 | 18 |
| sundaram | i12015425 | 64 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 1 | 1 | | | | 98 | 88 | 102 | | 5 | 129 | 84 | 35 | 89 | 76 | 1 | 28 |
| sundaresan | i12024293 | 56 | 1 | 1 | | | | | | 1 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 121 | 126 | 136 | | 5.6 | 146 | 103 | 52 | 90 | 63 | 1 | 18 |
| thangavel | i11025009 | 66 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 1 | | | | | 139 | 94 | 128 | | 5.4 | 154 | 48 | 37 | 102 | 30 | 1 | 20 |
| thangavel | i11030157 | 57 | 1 | | | | | 1 | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | | | | | 117 | 88 | 136 | | 5.65 | 152 | 103 | 38 | 105 | 60 | 1 | 26 |
| thiyagarajan | i12021239 | 30 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 121 | 111 | 145 | | 5.6 | 183 | 111 | 41 | 102 | 60 | 1 | 5 |
| vasantha kumar | i12005891 | 42 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 165 | 122 | 125 | | 5.55 | 220 | 526 | 33 | 109 | 48 | 2 | 11 |
| velusamy | i11025040 | 42 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 122 | 135 | 136 | | 5.53 | 243 | 89 | 43 | 189 | 58 | 1 | 10 |
| velusamy | i11023872 | 70 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | | | | 100 | 98 | 108 | | 5.5 | 132 | 100 | 35 | 102 | 60 | 1 | 18 |
| velusamy | i12033881 | 48 | 1 | 1 | | | | | | 1 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | | | | 94 | 100 | 140 | | 5.6 | 185 | 98 | 36 | 175 | 65 | 1 | 28 |
| velusamy | i12014956 | 74 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 216 | 98 | 135 | | 5.6 | 236 | 119 | 49 | 183 | 40 | 3 | 48 |
| velusamy | i12023685 | 65 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 124 | 118 | 138 | | 5.5 | 247 | 53 | 51 | 204 | 59 | 3 | 108 |
| venkatakrishnan | i11023380 | 61 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 128 | 120 | 145 | | 5.68 | 137 | 75 | 39 | 84 | 44 | 3 | 54 |
| vimalathithan | i11022981 | 38 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 1 | 3 | | | | | 121 | 102 | 126 | | 5.6 | 174 | 98 | 34 | 123 | 55 | 3 | 58 |
| viswanathan | i11035393 | 54 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | | | | | | 94 | 95 | 144 | | 5.3 | 245 | 186 | 32 | 132 | 68 | 3 | 32 |
| viswanathan | i12025170 | 52 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 137 | 111 | 148 | | 5.5 | 213 | 214 | 39 | 158 | 78 | 3 | 60 |
| viswanathan | i12026359 | 42 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 142 | 100 | 148 | | 5.6 | 268 | 147 | 42 | 186 | 64 | 1 | 45 |
| amsaveni | i11021651 | 56 | 0 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 108 | 92 | 132 | 156 | 5.9 | 196 | 108 | 51 | 127 | 60 | 3 | 66 |
| amuthavalli | i12003298 | 50 | 0 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | | | 136 | 98 | 123 | 142 | 5.97 | 116 | 86 | 39 | 69 | 56 | 1 | 30 |
| junaimubakthat | i12011577 | 54 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 1 | 2 | | | | | 142 | 101 | 149 | 135 | 6.2 | 192 | 85 | 46 | 175 | 53 | 1 | 48 |
| kamalasarawathi | i12003689 | 68 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 5 | | | | | 182 | 116 | 139 | 140 | 6.17 | 120 | 172 | 32 | 68 | 48 | 1 | 34 |
| munirabegam | i12009844 | 47 | 0 | 1 | 1 | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 139 | 101 | 152 | 129 | 6.13 | 204 | 175 | 30 | 142 | 66 | 1 | 22 |
| parvathy | i12005960 | 54 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 159 | 114 | 160 | 156 | 5.97 | 391 | 134 | 51 | 310 | 50 | 1 | 15 |
| roja mani | i12001344 | 51 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | | | | 128 | 110 | 154 | 175 | 6.13 | 326 | 154 | 70 | 221 | 71 | 1 | 56 |
| puspalatha | i11030268 | 49 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 142 | 117 | 174 | 163 | 5.8 | 209 | 72 | 30 | 165 | 64 | 1 | 36 |
| roja mani | i12001344 | 51 | 0 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | | | | 128 | 110 | 154 | 175 | 6.13 | 326 | 154 | 70 | 221 | 71 | 1 | 56 |
| saraswathy | i12002558 | 63 | 0 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 163 | 118 | 185 | 138 | 6.1 | 256 | 185 | 34 | 121 | 65 | 1 | 20 |
| subbathal | i12001301 | 73 | 0 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 147 | 124 | 169 | 165 | 6.17 | 187 | 69 | 41 | 132 | 48 | 3 | 76 |
| susila | i12002891 | 50 | 0 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | | | | 111 | 122 | 148 | 128 | 6.13 | 123 | 308 | 50 | 223 | 66 | 1 | 24 |
| vempayee | i11020852 | 47 | 0 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | | | | 90 | 92 | 129 | 148 | 6 | 161 | 173 | 29 | 104 | 68 | 1 | 17 |
| abdul rasheed | i11032072 | 41 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 122 | 107 | 152 | 145 | 6.03 | 242 | 79 | 54 | 163 | 77 | 1 | 18 |
| anbarasu | i12002889 | 53 | 1 | 1 | | | | | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | 1 | | | | 122 | 119 | 158 | 136 | 6.07 | 174 | 190 | 32 | 117 | 72 | 2 | 38 |
| arumugam | i1103583 | 64 | 1 | 1 | | 1 | | | | | 1 | p | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 125 | 125 | 167 | 185 | 6.39 | 108 | 59 | 27 | 69 | 75 | 1 | 35 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| arumugam | i12011589 | 52 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | | 145 | 120 | 167 | 164 | 5.8 | 136 | 47 | 32 | 105 | 68 | 1 | 18 |
| balthasar | i12007741 | 58 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | | 165 | 124 | 152 | 195 | 5.9 | 218 | 239 | 41 | 114 | 45 | 2 | 80 |
| chinnasamy | i12029662 | 58 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | | | 145 | 117 | 137 | 175 | 5.79 | 189 | 135 | 32 | 139 | 45 | 2 | 110 |
| damodaran | i12012358 | 65 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | | | | 122 | 120 | 139 | 138 | 5.77 | 202 | 117 | 39 | 148 | 66 | 1 | 80 |
| dayanand | i12018528 | 39 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | | | 105 | 95 | 128 | 148 | 5.72 | 184 | 150 | 42 | 124 | 75 | 1 | 38 |
| dhandapani | i12006932 | 55 | 1 | 1 | 1 | | | | | | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | | 124 | 109 | 139 | 144 | 5.85 | 224 | 182 | 47 | 152 | 42 | 2 | 4 |
| duraisamy | i12012754 | 71 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | | | | | 154 | 121 | 158 | 150 | 5.96 | 125 | 85 | 29 | 85 | 59 | 3 | 58 |
| farook | i12012969 | 45 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8 | | | | | 136 | 105 | 136 | 138 | 5.75 | 156 | 126 | 23 | 110 | 80 | 1 | 30 |
| govindasamy | i12028408 | 61 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | 1 | | | | 166 | 115 | 128 | 179 | 5.8 | 145 | 78 | 35 | 128 | 80 | 3 | 66 |
| govindasamy` | i120095026 | 56 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | | | | 128 | 116 | 136 | 150 | 6.2 | 129 | 68 | 33 | 91 | 65 | 1 | 18 |
| **jayapaul** | i11028570 | 56 | 1 | 1 | | | | | | | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | | | | | 165 | 129 | 142 | 139 | 6.29 | 166 | 105 | 24 | 120 | 66 | 3 | 65 |
| kanagaraj | i12030623 | 50 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 5 | 1 | | | | 85 | 107 | 136 | 120 | 5.85 | 195 | 234 | 28 | 124 | 60 | 1 | 50 |
| kandasamy | i11027690 | 68 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 4 | 1 | | | | 122 | 94 | 108 | 147 | 5.98 | 150 | 124 | 27 | 99 | 70 | 3 | 38 |
| kittusamy | i12009205 | 57 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 111 | 122 | 142 | 159 | 6.05 | 140 | 218 | 30 | 84 | 65 | 1 | 30 |
| krishnan | i12029082 | 60 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 115 | 110 | 138 | 126 | 5.8 | 222 | 254 | 35 | 155 | 49 | 2 | 32 |
| krishnasamy | i12032597 | 73 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 4 | | | | | 120 | 100 | 140 | 138 | 6.22 | 113 | 168 | 27 | 66 | 46 | 1 | 80 |
| kumarasamy | i12003671 | 68 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 124 | 96 | 118 | 141 | 6.25 | 145 | 108 | 28 | 106 | 50 | 1 | 8 |
| kuppan | i12030863 | 45 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 3 | | | | | 102 | 92 | 140 | 152 | 5.9 | 140 | 112 | 36 | 84 | 43 | 2 | 36 |
| kuppusamy | i12006437 | 61 | 1 | 1 | | | | | | 1 | 0 | 0 | 0 | 0 | | | 1 | 0 | 1 | 2 | | | | | 130 | 116 | 148 | 168 | 5.7 | 189 | 99 | 57 | 121 | 62 | 1 | 32 |
| leela krishnan | i12020561 | 57 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 5 | | | | | 99 | 76 | 165 | 140 | 6.08 | 172 | 92 | 32 | 129 | 59 | 1 | 30 |
| loganathan | i12002296 | 39 | 1 | | | | | | | | 0 | 0 | 0 | 0 | | | 1 | 0 | 0 | | 1 | | | | 125 | 99 | 113 | 136 | 6 | 337 | 273 | 19 | 265 | 70 | 1 | 28 |
| malar mani nathan | i12004802 | 43 | 1 | 1 | | | | | 1 | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 166 | 125 | 166 | 174 | 5.96 | 185 | 185 | 28 | 132 | 58 | 1 | 21 |
| mohamed ali | i11024680 | 71 | 1 | 1 | | 1 | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 94 | 88 | 118 | 150 | 6.13 | 111 | 81 | 21 | 74 | 32 | 3 | 64 |
| **murugesa**n | i11029109 | 65 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | | | | 157 | 118 | 169 | 199 | 6.1 | 145 | 120 | 34 | 106 | 71 | 1 | 78 |
| muthusamy | i11023259 | 54 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | 1 | | | | 119 | 115 | 157 | 180 | 6.1 | 159 | 60 | 33 | 113 | 72 | 1 | 74 |
| muthusamy | i12025161 | 64 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 1 | 5 | | | | | 189 | 113 | 149 | 164 | 5.8 | 219 | 51 | 49 | 182 | 30 | 3 | 55 |
| nagaraj | i11024318 | 43 | 1 | 1 | | | | | | | 1 | p | 0 | 1 | | | 0 | 0 | 1 | 4 | | | | | 188 | 122 | 154 | 166 | 5.8 | 209 | 76 | 50 | 136 | 52 | 1 | 102 |
| natarajan | i12006379 | 61 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 5 | 1 | | | | 131 | 125 | 148 | 176 | 6.02 | 159 | 122 | 31 | 111 | 44 | 1 | 14 |
| natesan | i12027669 | 50 | 1 | 1 | | 1 | | | | 1 | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | 1 | | | | 132 | 119 | 153 | 150 | 5.9 | 225 | 189 | 38 | 169 | 72 | 1 | 40 |
| palanisamy | i11028528 | 46 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 1 | 4 | | | | | 175 | 120 | 142 | 174 | 5.8 | 313 | 180 | 31 | 211 | 60 | 1 | 10 |
| palanisamy | i11035223 | 73 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 109 | 124 | 163 | 164 | 6.2 | 126 | 59 | 36 | 79 | 48 | 1 | 94 |
| palanisamy | i12002852 | 46 | 1 | 1 | | | | | | | 1 | 0 | 0 | 1 | | | 0 | 0 | 0 | | | | | | 96 | 110 | 168 | 138 | 5.8 | 167 | 219 | 26 | 113 | 62 | 1 | 66 |
| pradeep | i12023550 | 47 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | | 0 | 0 | 0 | | | | | | 148 | 105 | 147 | 162 | 5.8 | 215 | 115 | 35 | 158 | 65 | 3 | 40 |
| rajendiran | i12002581 | 39 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | | | | 104 | 107 | 149 | 182 | 6.1 | 148 | 220 | 37 | 102 | 40 | 2 | 30 |
| raju | i12001827 | 66 | 1 | 1 | 1 | 1 | | | 1 | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 5 | 1 | | | | 214 | 119 | 169 | 194 | 6.4 | 161 | 62 | 41 | 101 | 30 | 1 | 80 |
| ram mohan | i12000528 | 56 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 197 | 114 | 147 | 148 | 6 | 205 | 181 | 28 | 156 | 55 | 3 | 78 |
| ramachandran | i12004672 | 43 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 10 | | | | | 97 | 92 | 145 | 148 | 5.9 | 212 | 123 | 40 | 175 | 63 | 2 | 42 |
| ramalingam | i12007939 | 49 | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 1 | 1 | | | | | 164 | 120 | 158 | 164 | 5.9 | 114 | 107 | 31 | 70 | 56 | 1 | 30 |
| ramasamy | i11028712 | 56 | 1 | 1 | | | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | | | | 125 | 96 | 138 | 142 | 6 | 209 | 99 | 47 | 132 | 70 | 2 | 2 |
| ramasamy | i11029951 | 46 | 1 | 1 | | 1 | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 139 | 108 | 138 | 142 | 5.99 | 166 | 452 | 22 | 66 | 55 | 1 | 38 |
| ramasamy | i12003581 | 58 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 136 | 123 | 158 | 168 | 5.75 | 200 | 123 | 28 | 141 | 37 | 1 | 15 |
| ranganathan | i12006188 | 58 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | | | | 109 | 81 | 144 | 140 | 5.7 | 181 | 163 | 24 | 134 | 65 | 1 | 24 |
| ranganathan | i12016007 | 45 | 1 | 1 | | | | | | | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4 | | | | | 174 | 125 | 185 | 169 | 6.4 | 265 | 210 | 40 | 193 | 45 | 2 | 45 |
| rangasamy | i12007048 | 47 | 1 | 1 | | | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | | | | | 106 | 94 | 112 | 142 | 6.2 | 110 | 130 | 30 | 59 | 68 | 1 | 14 |

| name | ip number | Age | sex | chest pain | dyspnea | sweating | syncope | asymptomatic | giddiness | abd.pain | STEMI | thrombolysed ? | aw | iw | iw+RV | Lateral wall | unstable angina | NSTEMI | Hypertension | duration | Smoking | dm | new Diabetes mellitu | Duration of DM | RBS | FBS | PPBS | 2 hr GTT | hba1c | Total cholesterol | TGL | HDL | **LDL** | **EF** | **vessel** | gensini |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| rathinagiri | i12016679 | 54 | 1 | 1 | | | | | | | 0 | 0 | 0 | | | 0 | 0 | 1 | 1 | 1 | | | | | 128 | 100 | 142 | 128 | 6.2 | 186 | 140 | 36 | 160 | 58 | 1 | 18 |
| ravikumar | i12007009 | 47 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | 2 | 1 | | | | 126 | 118 | 158 | 148 | 6 | 118 | 143 | 20 | 74 | 54 | 1 | 55 |
| sathyamoorthi | i12003450 | 39 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 125 | 98 | 172 | 144 | 5.67 | 155 | 169 | 34 | 90 | 65 | 1 | 25 |
| seeniappan | i12000383 | 65 | 1 | 1 | 1 | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 1 | 5 | | | | | 128 | 99 | 166 | 165 | 6.35 | 175 | 85 | 28 | 149 | 70 | 3 | 86 |
| selvaraj | i11035800 | 51 | 1 | 1 | | | | | | | 1 | p | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 136 | 96 | 148 | 136 | 6.3 | 183 | 84 | 35 | 135 | 71 | 1 | 88 |
| shanmugasundaram | i12003058 | 45 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | | | | | 124 | 98 | 136 | 128 | 5.9 | 162 | 143 | 32 | 102 | 52 | 1 | 22 |
| shanmugavel | i11028471 | 61 | 1 | 1 | | 1 | | | | | 0 | 0 | 0 | | | 0 | 0 | 1 | 0 | | | | | | 136 | 120 | 162 | 175 | 6.04 | 161 | 72 | 41 | 94 | 74 | 2 | 35 |
| shanmugavel | i11030574 | 36 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 151 | 103 | 188 | 169 | 5.85 | 150 | 163 | 23 | 98 | 64 | 1 | 32 |
| sivagnanma | i12012472 | 43 | 1 | | | | | | | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | | 1 | | | | 128 | 114 | 147 | 155 | 6 | 125 | 48 | 35 | 81 | 66 | | 32 |
| subramani | i12009459 | 64 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | 1 | | | | 112 | 109 | 155 | 168 | 6.05 | 111 | 103 | 36 | 59 | 40 | 1 | 36 |
| subramaniam | i12018447 | 43 | 1 | 1 | 1 | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | 1 | | | | 122 | 100 | 150 | 147 | 5.8 | 100 | 237 | 47 | 147 | 72 | 2 | 56 |
| swamippan | i12024464 | 63 | 1 | 1 | | | | | | | 1 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 129 | 115 | 165 | 137 | 6.05 | 145 | 110 | 38 | 96 | 42 | 2 | 35 |
| thirunavukarsu | i12009097 | 47 | 1 | 1 | | 1 | | | | | 1 | 1 | 0 | 1 | | 0 | 0 | 0 | 1 | 1 | | | | | 147 | 119 | 175 | 148 | 5.78 | 197 | 215 | 35 | 136 | 40 | 3 | 38 |
| ubidur rahman | i12017332 | 55 | 1 | 1 | | | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | | | | | | 136 | 91 | 136 | 140 | 5.8 | 115 | 201 | 26 | 65 | 72 | 1 | 28 |
| velusamy | i12009465 | 66 | 1 | 1 | | 1 | | | | | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | | | | | | 128 | 100 | 155 | 162 | 6.2 | 111 | 102 | 25 | 71 | 55 | 1 | 6 |
| vincent | i12006575 | 60 | 1 | 1 | | 1 | | | | | 1 | 0 | 1 | 0 | | 0 | 0 | 0 | 1 | 2 | | | | | 118 | 119 | 147 | 138 | 6.13 | 269 | 163 | 50 | 198 | 25 | 1 | 32 |

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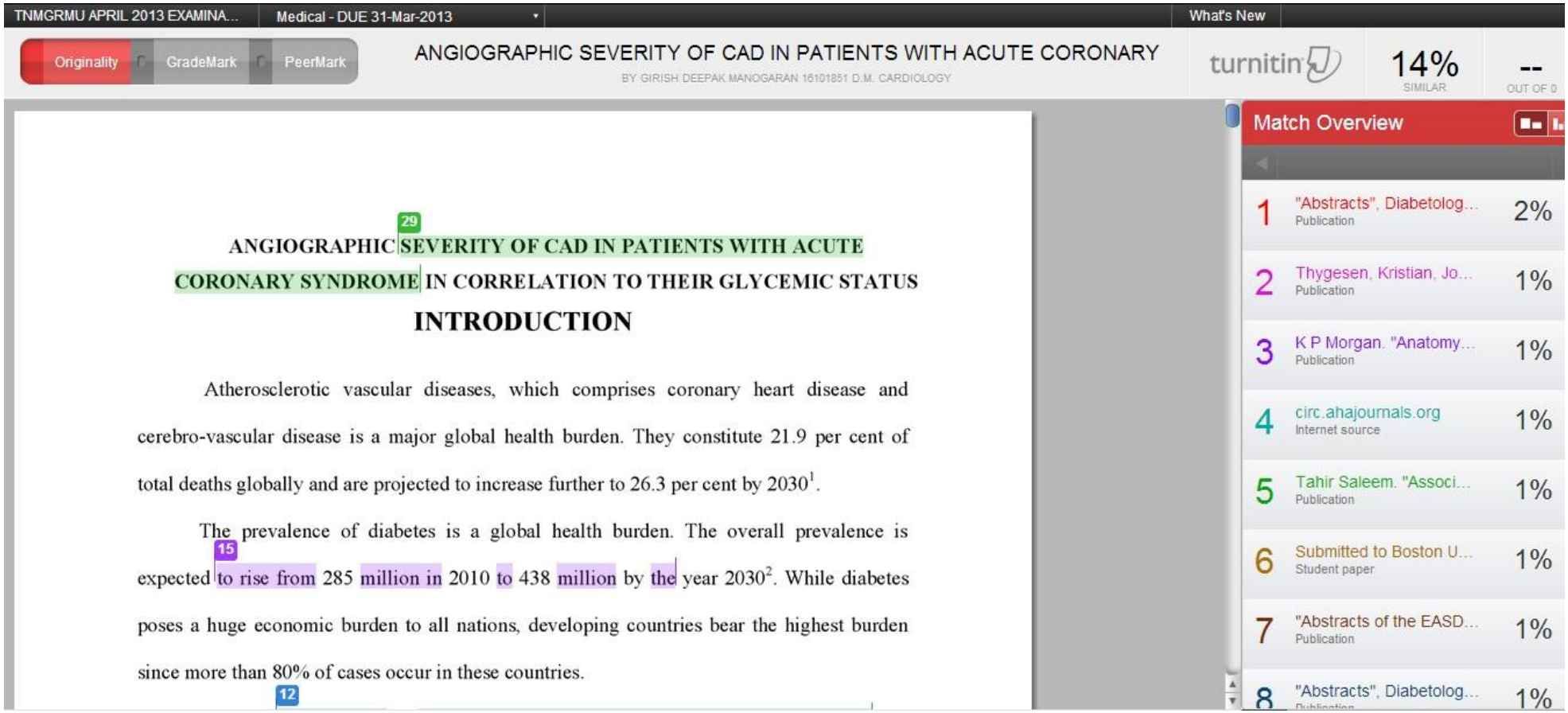
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ANGIOGRAPHIC SEVERITY OF CAD IN PATIENTS WITH ACUTE CORONARY SYNDROME IN CORRELATION TO THEIR GLYCEMIC STATUS
INTRODUCTION
Atherosclerotic vascular diseases, which comprises coronary heart disease and cerebro-vascular disease is a major global health burden. They constitute 21.9 per cent of total deaths globally and are projected to increase further to 26.3 per cent by 2030[1].
The prevalence of diabetes is a global health burden. The overall prevalence is expected to rise from 285 million in 2010 to 438 million by the year 2030[2]. While diabetes poses a huge economic burden to all nations, developing countries bear the highest burden since more than 80% of cases occur in these countries.
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